JUL 1956
LIBRARY
POFI
FISH & WILDLIFE
SERVICE

EXPEDITION REPORTS

Q115
C4
V. 24
Plates

Gt. Brit. Chall.
Off.
Rept. scient.
results.....

Zoology
Vol. 24, Plates
1888

LIBRARY
BUREAU OF COMMERCIAL FISHERIES
U. S. FISH AND WILDLIFE SERVICE
P. O. BOX 3830
HONOLULU HAWAII

THE

VOYAGE OF H.M.S. CHALLENGER.

ZOOLOGY—VOL. XXIV.

PLATES.

UNITED STATES COMMISSION.
3912
FISH & FISHERIES.

PACIFIC OCEANIC FISHERY
INVESTIGATIONS

REPORT

ON THE

SCIENTIFIC RESULTS

OF THE

VOYAGE OF H.M.S. CHALLENGER

DURING THE YEARS 1873-76

UNDER THE COMMAND OF

CAPTAIN GEORGE S. NARES, R.N., F.R.S.

AND THE LATE

CAPTAIN FRANK TOURLE THOMSON, R.N.

PREPARED UNDER THE SUPERINTENDENCE OF

THE LATE

Sir C. WYVILLE THOMSON, Knt., F.R.S., &c.

REGIUS PROFESSOR OF NATURAL HISTORY IN THE UNIVERSITY OF EDINBURGH

DIRECTOR OF THE CIVILIAN SCIENTIFIC STAFF ON BOARD

AND NOW OF

JOHN MURRAY

ONE OF THE NATURALISTS OF THE EXPEDITION

ZOOLOGY—VOL. XXIV.

PLATES

Published by Order of Her Majesty's Government

PRINTED FOR HER MAJESTY'S STATIONERY OFFICE

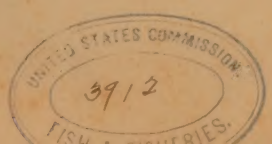
AND SOLD BY

LONDON :—EYRE & SPOTTISWOODE, EAST HARDING STREET, FETTER LANE

EDINBURGH :—ADAM & CHARLES BLACK

DUBLIN :—HODGES, FIGGIS, & CO.

1888



72

LIBRARY
FISH & WILDLIFE SERVICE
PACIFIC OCEANIC FISHERY
INVESTIGATIONS

PRINTED BY NEILL AND COMPANY, EDINBURGH,
FOR HER MAJESTY'S STATIONERY OFFICE.

CONTENTS.

Report on the Crustacea Macrura dredged by H.M.S. Challenger during the years 1873–1876.

By C. Spence Bate, F.R.S., &c.

EDITORIAL NOTE.

These Plates illustrate the text of Mr. Spence Bate's Report on the Crustacea Macrura, and number in all 157—two of them illustrating Dr. Hoek's Appendix to the Report on a parasitic Cirriped.

John Murray.

Challenger Office, 32 Queen Street,
Edinburgh, 8*th May* 1888.

PLATE I.

PLATE I.

The same letters represent homological parts on all the plates.

Cheiroplatea cenobita (p. 12).

Fig. 1♀. Lateral view; enlarged twice.
,, 1*a*. Ophthalmopod or eye.
,, 1*b*. First antenna.
,, 1*c*. Second antenna.
,, 1*d*. Siagon or mandible.
,, 1*e*. First siagnopod or maxilla.
,, 1*f*. Second siagnopod or maxilla.
,, 1*g*. Third siagnopod or maxilla (injured ?).
,, 1*h*. First gnathopod.
,, 1*i*. Second gnathopod.
,, 1*k*. First pair of pereiopoda, chelæ.
,, 1*n*. Fourth pereiopod; terminal joints.
,, 1*o*. Fifth pereiopod; terminal joints.
,, 1*br*. Branchial plume.
,, 1*r*. String of ova.
,, 1*vzv*. Rhipidura; z, telson; *v*,*v*, posterior pair of pleopoda.

Cheramus orientalis (p. 30).

,, 2. Lateral view; enlarged four times.
,, 2c. Cephalon and carapace (dorsal view).
,, 2*a*. Ophthalmopod or eye.
,, 2*b*. First antenna. Flagella.
,, 2*i*. Second gnathopod.
,, 2*o*. Fifth pereiopod; terminal joints.
,, 2*q*. Second pleopod.
,, 2*r*. Third pleopod.
,, 2*s*. Fourth pleopod; *ms*, stylamblys, cincinnuli, and hair; magnified.
,, 2*br*. Branchial plume.
,, 2*br*. Section of branchia.
,, 2*v*. Posterior pleopoda, margin; magnified.
,, 2z. Telson.

C.S.B. ad nat. J. Hawkins, lith.

1. CHEIROPLATEA CENOBITA. 2. CHERAMUS ORIENTALIS.

PLATE II.

PLATE II.

Cheramus occidentalis (p. 32).

Fig. 1. Lateral view; enlarged two and a half times.
„ 1c. Cephalon, lateral view of carapace, with ophthalmopod, first antenna, and peduncle of second.
„ 1z. Telson; *v*, sixth pair of pleopoda.

Callianassa occidentalis (p. 29).

„ 2*k*. First pereiopod; natural size.

Scallasis amboinæ (p. 34).

„ 3. Lateral view; enlarged four times.
„ 3*a*,*a*. Ophthalmopoda.
„ 3*b*. First antenna.
„ 3*i*. Second pair of gnathopoda (attached).
„ 3*o*. Fifth pereiopod.
„ 3*r*. Third pleopod.
„ 3*r.ms*. Stylamblys; magnified.
„ 3*br*. Branchial plume.
„ 3*vzv*. Rhipidura; z, telson; *v*,*v*, posterior pair of pleopoda.
„ 4. Ventral aspect; enlarged six times. Posterior somites of pleon and rhipidura reversed.

C.S.B. ad nat. J. Hawkins lith. Brendon & Son, Plymouth, im

1. CHERAMUS OCCIDENTALIS. 2. CALLIANASSA OCCIDENTALIS.

3 & 4. SCALLASIS AMBOYNÆ.

PLATE III.

PLATE III.

Thalassina scorpionoides, nat. size (p. 19).

c. Peduncle of first antenna; *c''*, coxal joint seen in section, showing the acoustic apparatus; *c'''*, arrangement of hairs within the chamber; *c''''*, one of the hairs magnified.

d. Siagon or mandible.

e. First siagnopod.

f. Second siagnopod, with one of the hairs of the mastigobranchial lash magnified in sections.

C.S.B ad nat., J.Hawkins, lith.

Brendon & Son, Plymouth, imp.

THALASSINA · SCORPIONOIDES.

PLATE IV.

PLATE IV.

Thalassina scorpionoides, branchiæ (p. 19).

Fig. 1. Pereion, showing the form and arrangement of the branchiæ; lateral wall of the carapace removed.

„ *h*. First gnathopod with rudimentary mastigobranchia, with podobranchia and arthrobranchia attached; *h''*, arthrobranchial plume (detached); enlarged.

„ *i*. Second gnathopod with rudimentary mastigobranchia, with podobranchia attached; *i''*, arthrobranchial plume detached, showing the under side; enlarged.

„ *k*. Coxa of first pereiopod with rudimentary mastigobranchial lash, with the podobranchial plume attached; *k''*, anterior arthrobranchia detached, showing under side; *k'''*, posterior arthrobranchia, showing upper surface; *k''''*, under surface of the base of the same; enlarged.

C.S.B. ad.nat., J.Hawkins. lith.

Brendon & Son, Plymouth, imp

THALASSINA SCORPIONIDES. (BRANCHIA.)

PLATE V.

PLATE V.

Paraxius altus (p. 37).

Fig. 1. Lateral view; enlarged three times.
,, 1. Rostrum, upper surface.
,, 1*d*. Siagon or mandible.
,, 1*g*. Third siagnopod.
,, 1*h*. First gnathopod.
,, 1*i*. Second gnathopod (with podobranchia and mastigobranchia detached)
,, 1*k*. First pereiopod.
,, 1*l*. Second pereiopod.
,, 1*o*. Fifth pereiopod (extremity).
,, 1*q*. Second pleopod (part).
,, 1*vzv*. Rhipidura; z, telson; *v*,*v*, pleopoda.
,, 1*br*. Branchial plumes.

Eiconaxius acutifrons (p. 40).

,, 2♀. Lateral view; enlarged three and a half times.
,, 2♀. Upper surface of rostrum, female.
,, 2♂. Rostrum, male.
,, 2*d*. Siagon or mandible.
,, 2*g*. Third siagnopod.
,, 2*h*. First gnathopod.
,, 2*i*. Second gnathopod.
,, 2*k.l*. First pereiopod; from the left side.
.. 2*q*. Third pleopod, with stylamblys and a cincinnulus detached and magnified.

Eiconaxius kermadeci, female (p. 43).

,, 3♀. Lateral view of a female specimen; enlarged twice.
,, 3*kl*. First pereiopod; from the left side.
,, 3*kr*. First pereiopod; from the right side.
,, 3*l*. Second pereiopod.

Eiconaxius parvus (p. 44).

,, 4. Lateral view of a female specimen; enlarged four times.
,, 5. Brephalos extracted from the ovum, seen from the ventral surface; magnified about thirty times.

Brendon & Son, Plymouth, imp

C.S.B. ad. nat., J. Hawkins, lith.

1. PARAXIUS ALTUS.
2. EICONAXIUS ACUTIFRONS.
3. EICONAXIUS KERMADECI.
4. EICONAXIUS PARVUS.
5. EICONAXIUS PARVUS (BREPHALUS.)

PLATE VI.

PLATE VI.

Thaumastocheles zaleuca, nat. size (p. 47).

c. Ventral aspect of the cephalon.

c″. Frontal aspect of the same.

b. First antenna.

c. Second antenna.

h. First gnathopod.

i. Second gnathopod.

k′. First pereiopod, showing the propodos.

k″. First pereiopod, showing the articulation of the dactylos.

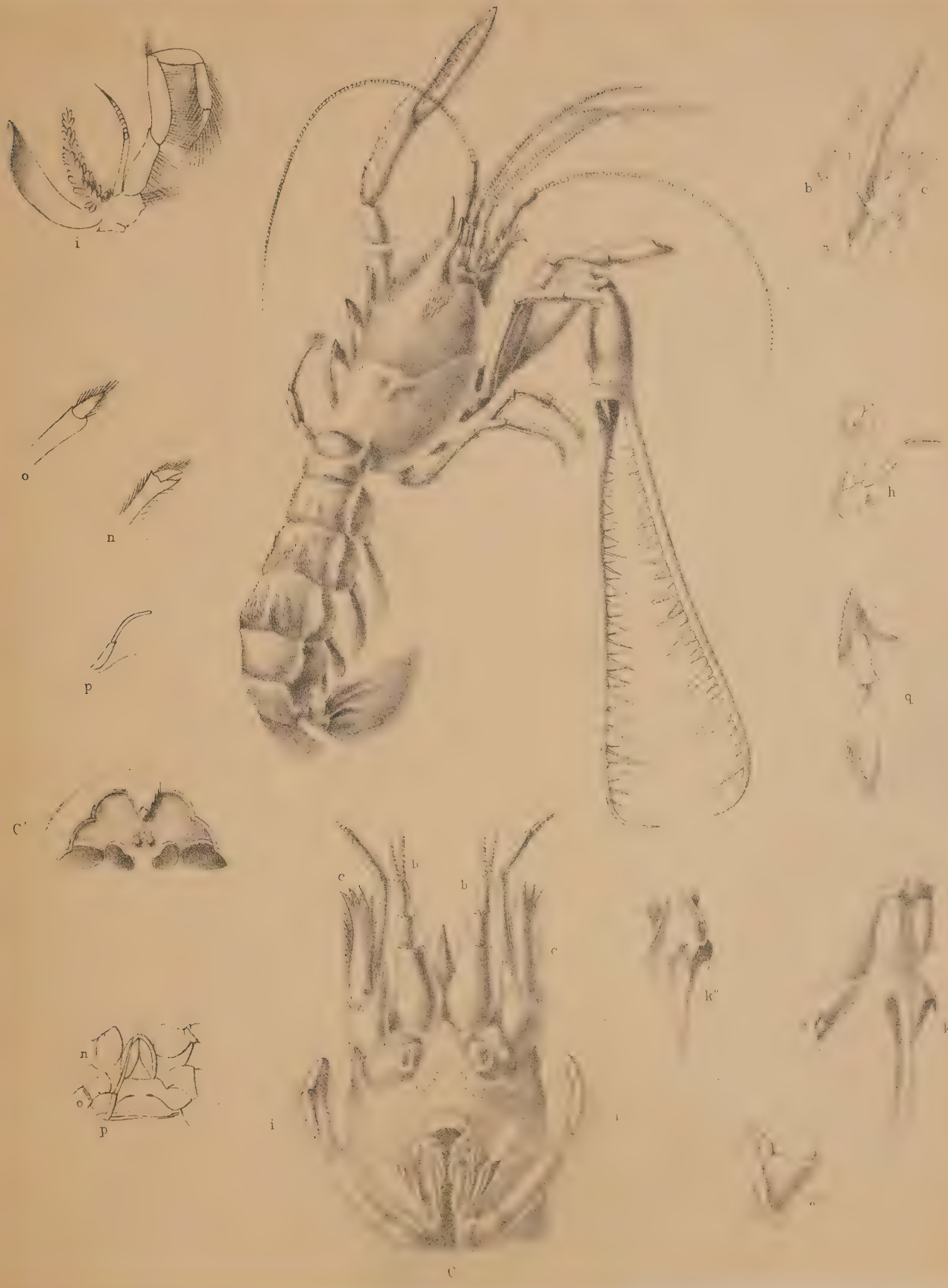
k‴. First pereiopod, showing the articulation of the ischium with the basis.

n. Fourth pereiopod; terminal joints.

o. Fifth pereiopod; terminal joints.

p. First pleopod.

q. Second pleopod.



Brendon & Son, Plymouth, imp.

C.S.B. ad nat. J. Hawkins, lith.

THAUMASTOCHELES.

PLATE VIII.

PLATE VIII.

Ibaccus verdi, nat. size (p. 58).

♂. Male, showing ventral aspect.

♀. Female, showing dorsal aspect.

c. Cephalon; dorsal aspect; *b*, first antennæ; *c*, second antennæ.

o♂. Fifth pereiopod of the male.

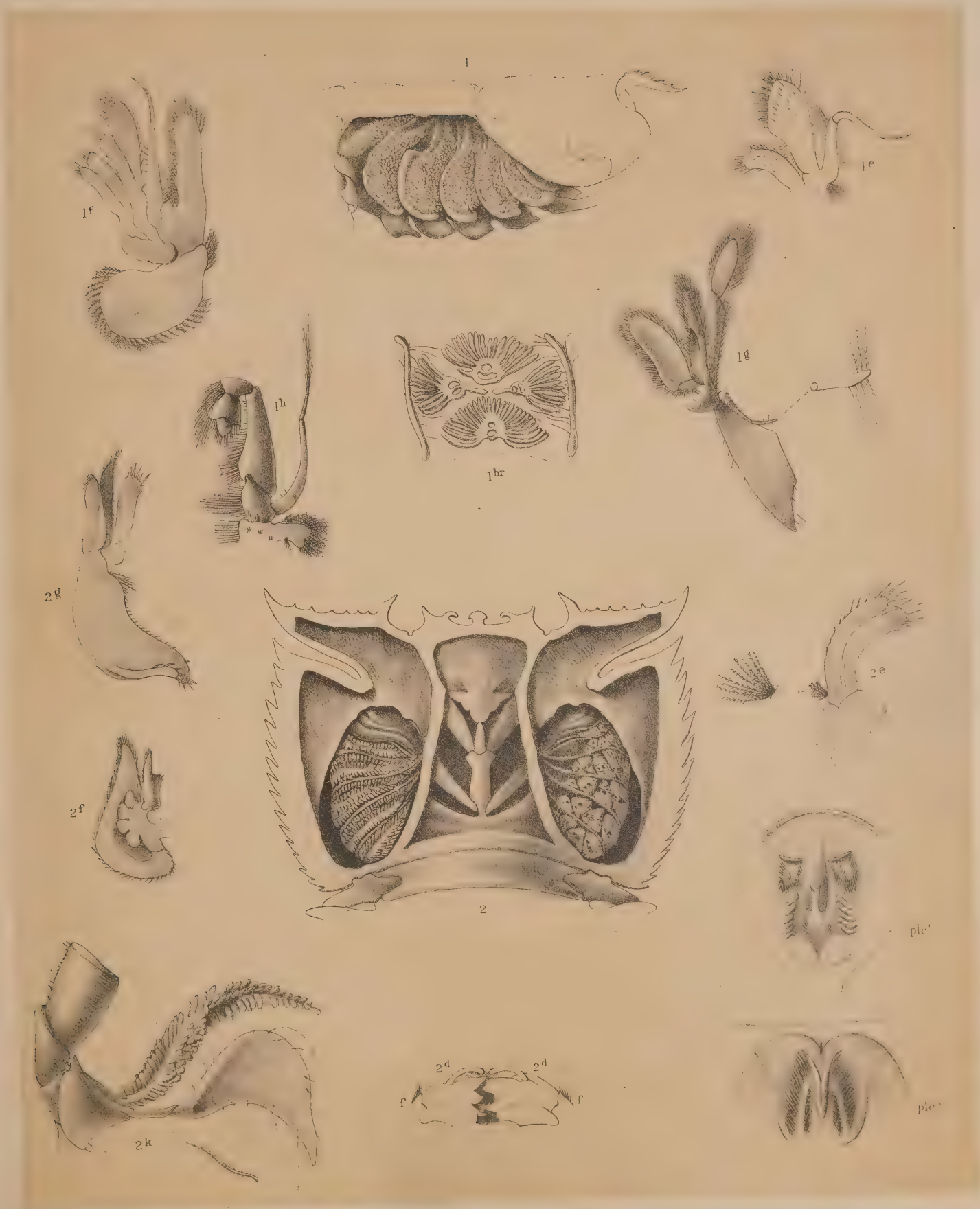
o♀. Fifth pereiopod of the female.

p♂. First pleopod of the male.

p♀. First pleopod of the female.

q♂. Second pleopod of the male.

q♀. Second pleopod of the female.



C.S.B ad nat., J. Hawkins, lith

Brendon & Son, Plymouth, imp

1. THAUMASTOCHELES ZALEUCUS. 2. IBACCUS VERDI.

PLATE VII.

PLATE VII.

Thaumastocheles zaleuca (p. 47).

Fig. 1. Pereion; lateral view, with part of carapace removed to show the arrangement of the branchiæ.

,, 1*br*. Diagram of the vertical arrangement of a section of the branchial apparatus.

,, 1*e*. First siagnopod.

,, 1*f*. Second siagnopod.

,, 1*g*. Third siagnopod.

,, 1*h*. First gnathopod.

Ibaccus verdi (p. 58).

,, 2. Dorsal aspect of the pereion with the carapace removed to show the branchiæ; left side with the branchiæ intact, right shown in section.

,, 2*d*. Siagones or mandibles; *ff*, shows the position of the extremities of the second pair of siagnopoda.

,, 2*e*. First pair of siagnopoda.

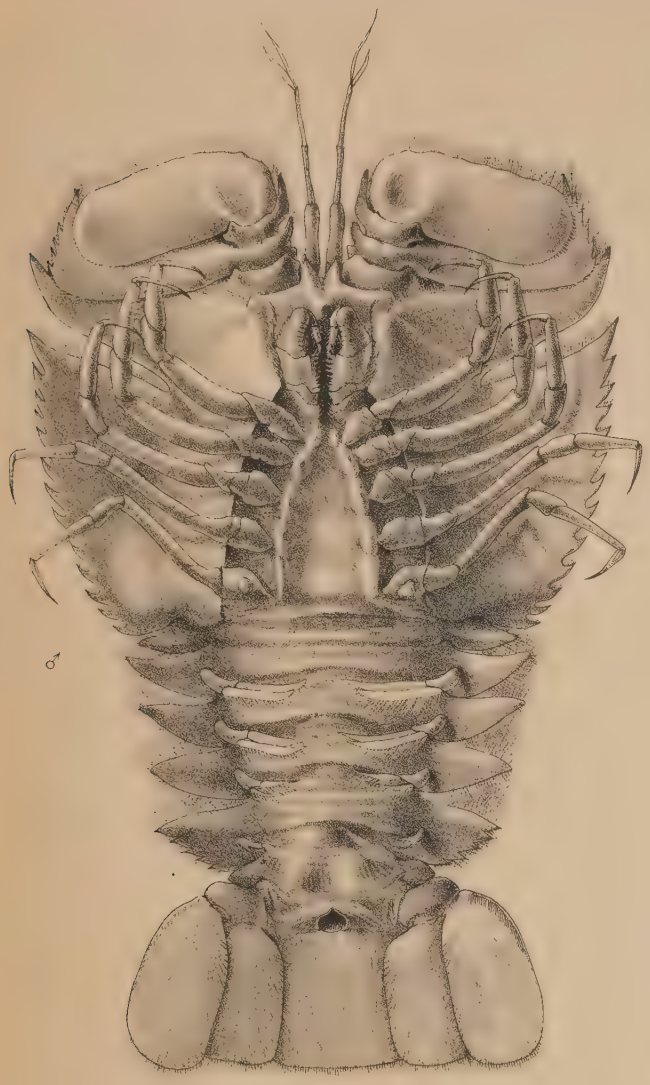
,, 2*f*. Second pair of siagnopoda.

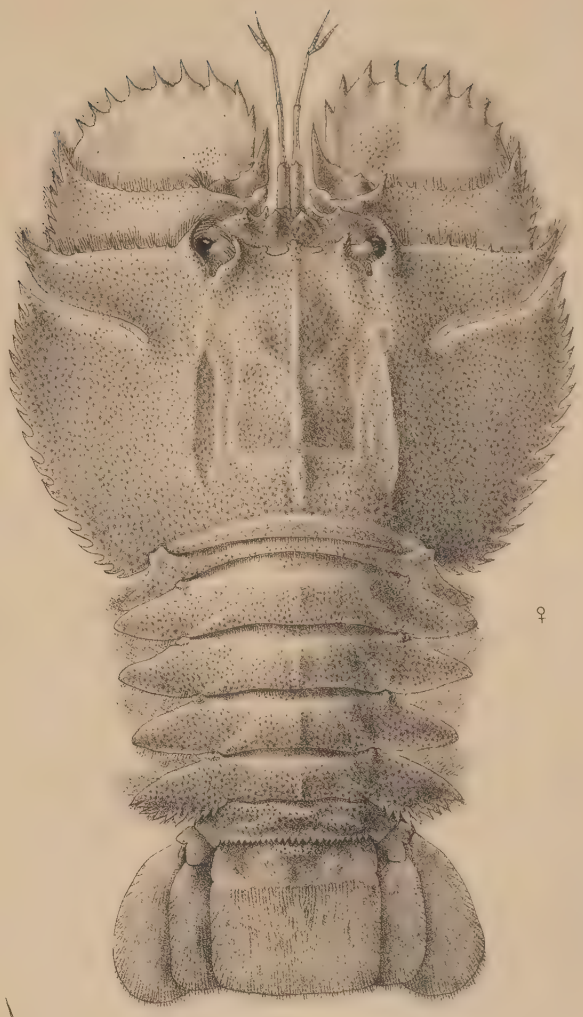
,, 2*g*. Third pair of siagnopoda.

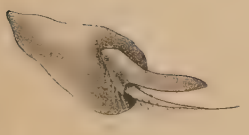
,, 2*k*. First pereiopod; showing the coxa with mastigobranchia and podobranchia attached.

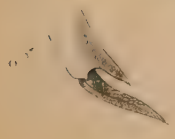
,, *plc'*. Upper surface of the pyloric apparatus.

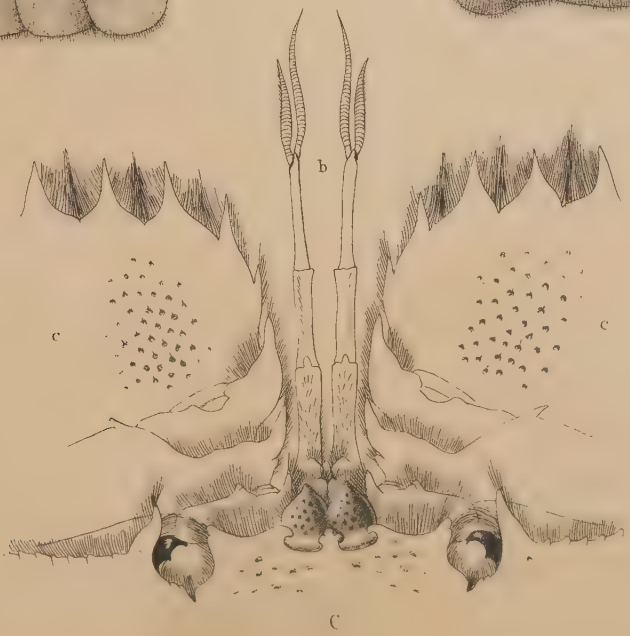
,, *plc''*. Under surface of the pyloric apparatus.

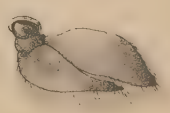












C

Brendon & Son, Plymouth, imp.

C.S.B. ad nat. J. Hawkins, lith.

IBACCUS VERDI.

PLATE IX.

PLATE IX.

Ibaccus brevipes. (p. 62).

Fig. 1. Dorsal aspect of the animal, male; nat. size.

,, 1*q*. Second somite of pleon.

,, 1*q*. Second pleopod.

Ibaccus alticrenatus (p. 63).

,, 2♀. Dorsal view of a female; nat. size.

Arctus sordidus (p. 66).

,, 3. Dorsal view of a female; nat. size.

,, 3″. One side of the ventral aspect of pereion; enlarged.

,, 3*q* ♂. Second pleopod of the male.

,, 3*q*♀. Second pleopod of the female.

,, 3*r* ♂. Third pleopod of the male.

,, 3*r*♀. Third pleopod of the female.

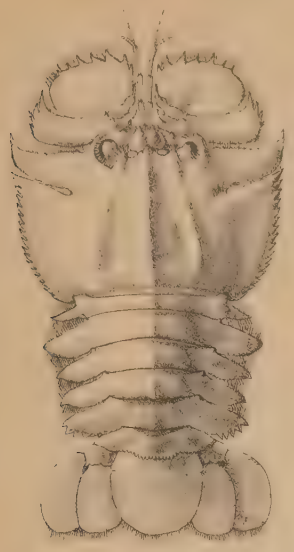
Arctus orientalis (p. 68).

,, 4. Dorsal view of the female; nat. size.

,, 4″. One side of the ventral aspect of pereion; enlarged.

,, 4*o* ♂. Extremity of posterior pereiopod of the male.

,, 4*o*♀. Extremity of posterior pereiopod of the female.



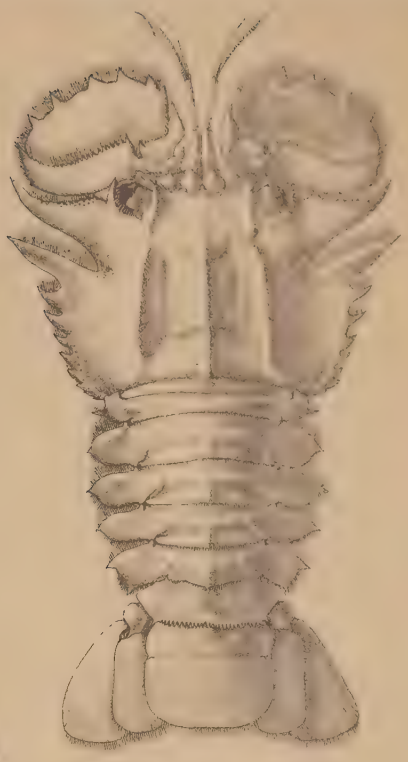
1

1♀

1♂

4♀

4♂



2♀

3♂

3♂

3♀

3♂

3

3

4

4

C.S.B. ad nat. J. Hawkins, lith.

Brendon & Son, Plymouth, imp.

1. IBACCUS BREVIPES.
2. " ALTICRENATUS. ♀
3. ARCTUS SORDIDUS. ♀
4. " ORIENTALIS. ♀

PLATE X.

PLATE X.

Arctus tuberculatus (p. 70).

Fig. 1. Lateral view; natural size.

„ 2. Dorsal view; enlarged three times.

„ 1*o* ♂. Fifth pair of pereiopoda of the male.

„ 1*o* ♀. Fifth pair of pereiopoda of the female.

Arctus immaturus (p. 71).

„ 3. Dorsal aspect of a specimen; enlarged four times.

„ 3″. Ventral aspect of pereion.

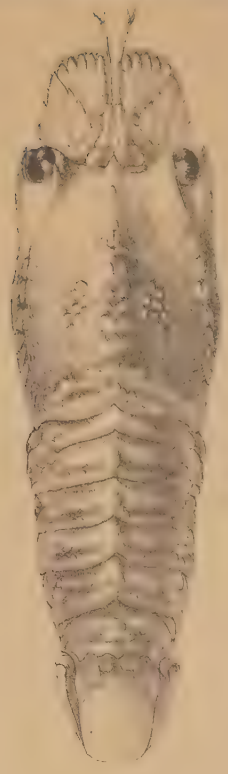
Arctus pygmæus (p. 73).

„ 4♀. Dorsal aspect of a female; enlarged four and a half times.

„ 4*c*. Second antenna.

„ 4*q*. Third pleopod and stylamblys; the latter detached and magnified.

„ 4*r*. Brephalos; extracted from the ovum.



C.S.B. ad nat., J. Hawkins, lith.

Brendon & Son, Plymouth, imp

1. ARCTUS TUBERCULATUS.
2. " " (ENLARGED.)
3. ARCTUS IMMATURUS.
4. " PYGMÆUS.

PLATE Xa.

PLATE Xa.

Panulirus guttatus, var., nat. size (p. 78).

c, Part of second antenna, showing the stridulating organ.

J.C.Richard lith. ad nat.

PANULIRUS GUTTATUS, var

PLATE XI.

PLATE XI.

Palinostus lalandii (p. 86).

(*Palinurus lalandii* on Plate.)

Fig 1. A young specimen; twice the natural size.

„ 1*q*. Second pleopod.

Panulirus angulatus (p. 81).

„ 2. Ventral aspect of a young and imperfect specimen; enlarged two and a half times.

„ 2*q*. Second pleopod.

„ 3. Dorsal aspect.

„ 4. Lateral aspect.

C.S.B ad.nat., J Hawkins, lith.

Brendon & Son, Plymouth, imp

1. PALINURUS LALANDII.
2. PANULIRUS ANGULATUS, (VENTRAL)
3. PANULIRUS ANGULATUS, (DORSAL)
4. " " LATERAL)

PLATE XIA.

PLATE XIa.

Palinostus lalandii, nat. size (p. 86).

PALINOSTUS LALANDII.

PLATE XII.

PLATE XII.

Palinostus lalandii (p. 86).

(*Palinurus lalandii* on Plate.)

Fig. 1. Lateral view, with part of the carapace removed to show the arrangement of the branchiæ.

„ 1*h*. First gnathopod.

„ 1*i*. Second gnathopod.

Panulirus penicillatus (p. 82).

„ 2. Lateral view of pereion, with part of the carapace removed to show the arrangement of the branchiæ; slightly enlarged.

„ 2*h*. First gnathopod.

„ 2*i*. Second gnathopod.

Brendon & Son, Plymouth, imp.

C. S. B. ad. nat., J. Hawkins, lith.

1. PALINURUS LALANDII, (BRANCHIÆ)
2. PANULIRUS PENICILLATUS, (Dº)

PLATE XIIA.

PLATE XIIa.

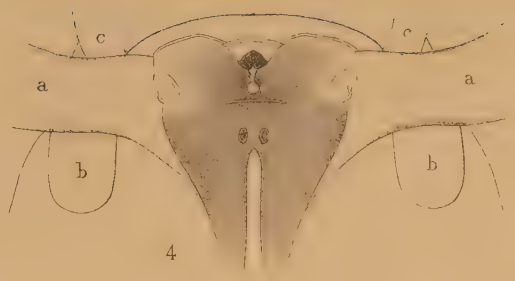
PALINURIDÆ—Development.

Fig. 1. Brephalos of *Palinurus vulgaris*, extracted from the ovum; magnified twenty-five times (p. 89).

,, 2. Brephalos of a *Palinurus* (?), taken off Samboangan; magnified twenty-eight times (p. 90).

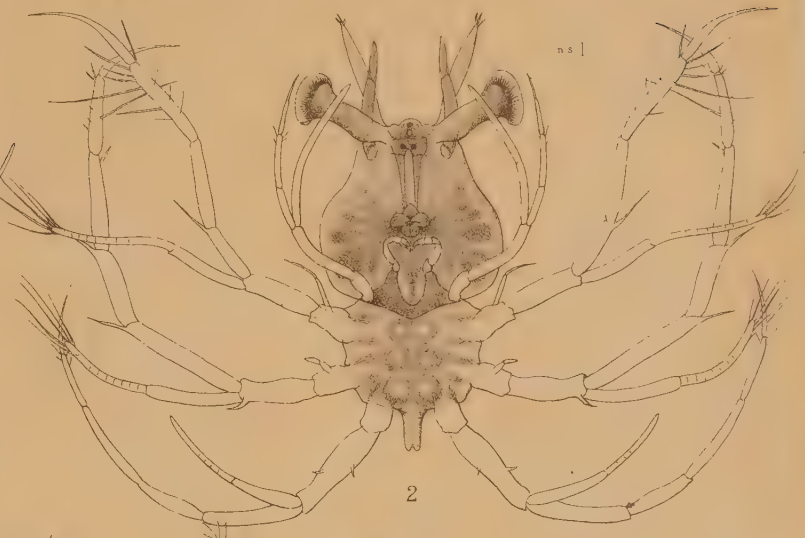
,, 3. Phyllosoma of a *Panulirus* (?), taken off the Celebes Islands; magnified nine times (p. 91).

,, 4. Cephalon of fig. 2; *a*, *a*, bases of ophthalmopoda; *b*, *b*, bases of first pair of antennæ; *c*, *c*, bases of second pair of antennæ.



4

1



2

3

C.S.B. ad nat.

McFarlane & Erskine, Lith.t Edin.t

PALINURIDÆ, PHYLLOSOMA, (DEVELOPMENT)

PLATE XIIB.

PLATE XIIB.

PALINURIDÆ—Development (p. 89).

Fig. 1. Phyllosoma of a *Panulirus* (?), taken off the Fiji Islands; magnified seven times (p. 91).

„ 2. Pleon of the same; *v*, posterior pleopod.

„ 3. Nervous system of a Phyllosoma of *Panulirus* (?) (p. 91).

a,a. Ophthalmopoda.
b,b. First antennæ.
c,c. Second antennæ.
c'. The phymacerite.
g,g. Green gland (3*gg*, shows structure enlarged).
d. Mandibles.
e. First pair of siagnopoda.
Hp. Hepatic ducts.
F–H. Ganglia of thorax.
K–O. Ganglia of pereion.
o,o. Posterior pair of pereiopoda.
P–T. Ganglia of pleon.
V. Sixth somite of pleon.
Z,*v.* Rhipidura.

SCYLLARIDÆ—Development (p. 95).

„ 4*b*. Second antenna of a Phyllosoma of one of the Scyllaridæ (p. 96).

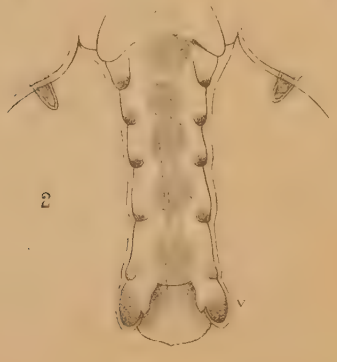
„ 4*e*. First siagnopod.

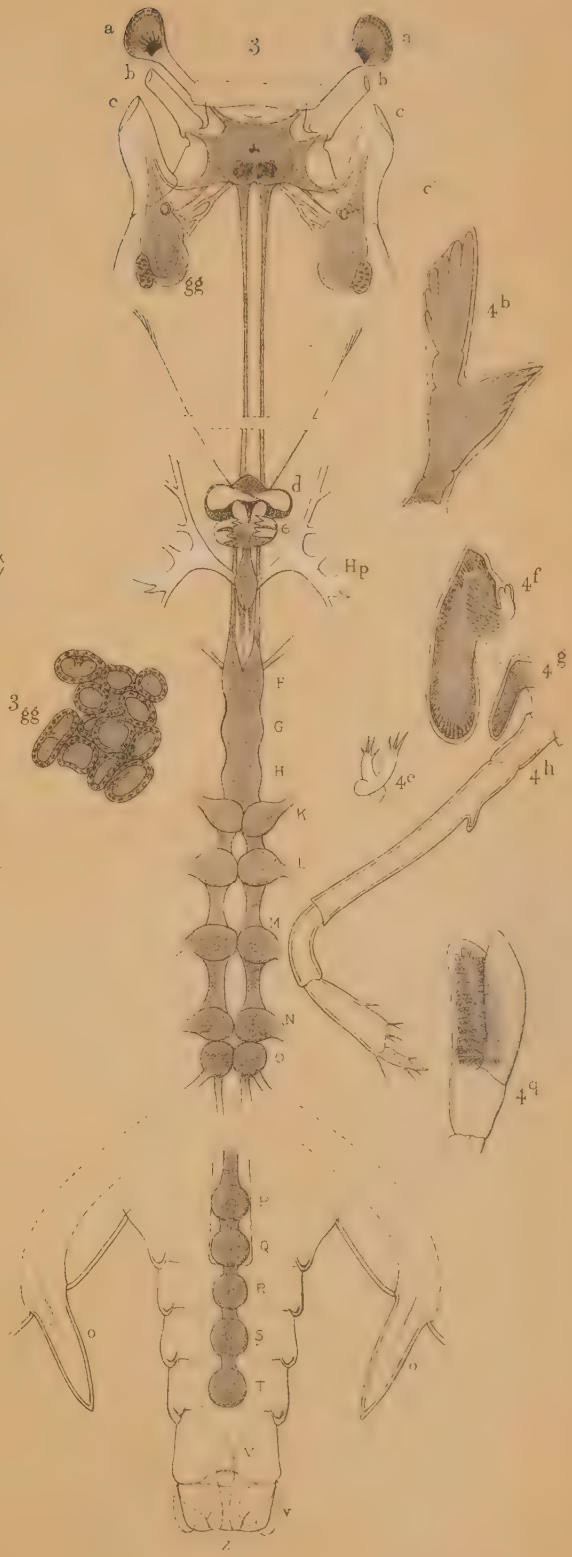
„ 4*f*. Second siagnopod.

„ 4*g*. First gnathopod (?).

„ 4*h*. Second gnathopod (?).

„ 4*q*. Podobranchia and mastigobranchia of pereiopod; not yet escaped from the embryonic sac.





C.S.B. ad nat. McFarlane & Erskine, Lith^rs Edin^r

1–3. PALINURIDÆ, PHYLLOSOMA, (DEVELOPMENT)
4. SCYLLARIDÆ, " " " (Dº)

PLATE XIIc.

PLATE XIIc.

PALINURIDÆ and SCYLLARIDÆ—Development (p. 95).

Fig. 1. Phyllosoma of *Panulirus* (?), from the West Indies; enlarged three times (pp. 94, 97).

„ 2. Phyllosoma of one of the Scyllaridæ; enlarged eight times (p. 96).

M.c Farlane & Erskine, Lith.rs Edin.r

2. SCYLLARIDÆ, PHYLLOSOMA, (DEVELOPMENT)
1. PALINURIDÆ, " " " (Dº)

PLATE XIID.

PLATE XIID.

SCYLLARIDÆ—Development.

Fig. 1. *Phyllosoma furcicaudatum.* Young of one of the Scyllaridæ; enlarged fiftee times (p. 98).

„ 2*f*. Second siagnopod of *Phyllosoma verdense*; enlarged (p. 98).

„ 2z. Telson of the same.

„ 3P. Pleon of *Phyllosoma philippinense;* z, telson; *m*, posterior pair of pereiopoda (p. 99).

C.S.B. ad nat. W. Purkiss lith.

Hanhart. imp.

SCYLLARIDAE (Development.)

1. PHYLLOSOMA FURCICAUDATUM.
2. Dº VERDENSE.
3. Dº PHILIPPINENSE.

PLATE XIIE.

PLATE XIIE.

Eryoneicus cæcus (p. 122).

Fig. 1. Dorsal aspect; enlarged five and a half times.

„ 2. Ventral aspect; enlarged seven times.

b. First antenna.
c. Second antenna.
k. First pereiopod.
l. Second pereiopod.
m. Third pereiopod.
n. Fourth pereiopod.
o. Fifth pereiopod.
P. Pleon.
p. First pleopod.
z. Telson.
br. Branchial plume.

C.S.B. ad nat. W. Purkiss lith.

Hanhart imp.

1. ERYONEICUS CÆCUS
2. Dº Dº (VENTRAL)

PLATE XIII.

PLATE XIII.

Polycheles crucifera (p. 127).

Fig. 1. Dorsal aspect; enlarged two and a half times.

c. Anterior portion of the dorsal surface of the cephalon; considerably enlarged, showing both pairs of antennæ (*b*, *c*), and the ophthalmopoda.

p. Pleon; lateral view.

a. Ophthalmopod seen from the front when the antennæ, *b* and *c*, are removed.

b. First antenna, the peduncle, viewed laterally.

i. Second gnathopod.

o. Terminal joints of the posterior pair of pereiopoda.

p. First pleopod of male.

q. Second pleopod with two stylamblydes of male.

C.S.B ad nat. J. Hawkins, lith. Brendon & Son, Plymouth, imp

POLYCHELES CRUCIFERA.

PLATE XIV.

PLATE XIV.

Polycheles baccata (p. 131).

Fig. 1. Dorsal view of male; enlarged one-fourth.

,, 1c. Anterior portion of cephalon, showing *a*, ocular notch; *b*, first antenna; *c*, second antenna.

,, 1p. Pleon; lateral view.

,, 1*o*, ♀. Posterior pereiopod of female.

,, 1♂,*oo*. Posterior pair of pereiopoda of male; *pp*, first pair of pleopoda of same.

,, 1*p*, ♀. First pleopod of female.

,, 1*q*, ♂. Second pleopod of male, with two stylamblydes.

,, 1*q*, ♀. Second pleopod of female, with one stylamblys.

Polycheles helleri (p. 138).

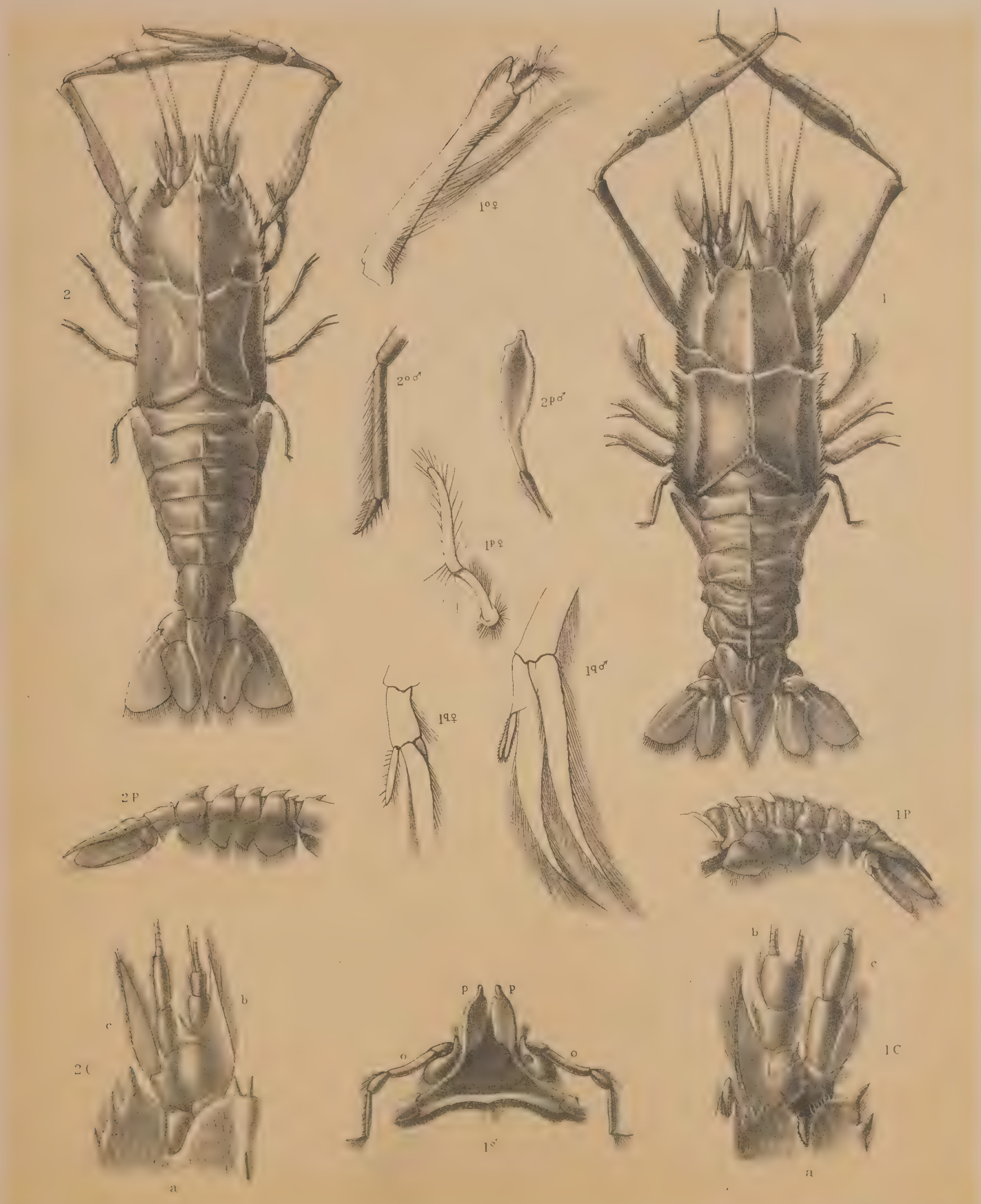
,, 2. Dorsal view; enlarged three times.

,, 2c. Anterior portion of cephalon, showing *a*, ocular notch; *b*, first antenna; *c*, second antenna.

,, 2p. Pleon; lateral view.

,, 2*o*, ♂. Posterior pereiopod of male.

,, 2*p*, ♂. First pleopod of male.



J.C.B. ad nat. J. Hawkins. lith

Brendon & Son, Plymouth, imp

1. POLYCHELES BACCATA.
2. „ HELLERI.

PLATE XV.

PLATE XV.

Polycheles helleri (p. 138).

(*Pentacheles helleri* on Plate.)

Fig. 1. Anterior portion of the dorsal surface of the cephalon, showing the ophthalmopoda and both pairs of antennæ (*b*, *c*).

Pentacheles obscura (p. 143).

„ 2, ♀. Dorsal aspect of the female; enlarged twice.

„ 2P. Pleon; lateral view.

„ 2*o*, ♀. Posterior pereiopod, chelate in female.

Stereomastis suhmi (p. 154).

(*Pentacheles suhmi* on Plate.)

„ 3c. Dorsal view of the animal, male; enlarged twice.

„ 3c. Lateral half of the anterior dorsal portion of cephalon, showing ocular notch, ophthalmopod (*a*), and first antenna (*b*).

„ 3c. First antenna.

„ 3*o*, ♂. Posterior pereiopod of male, showing elongation of the vas deferens.

„ 4. Lateral view of the same animal.

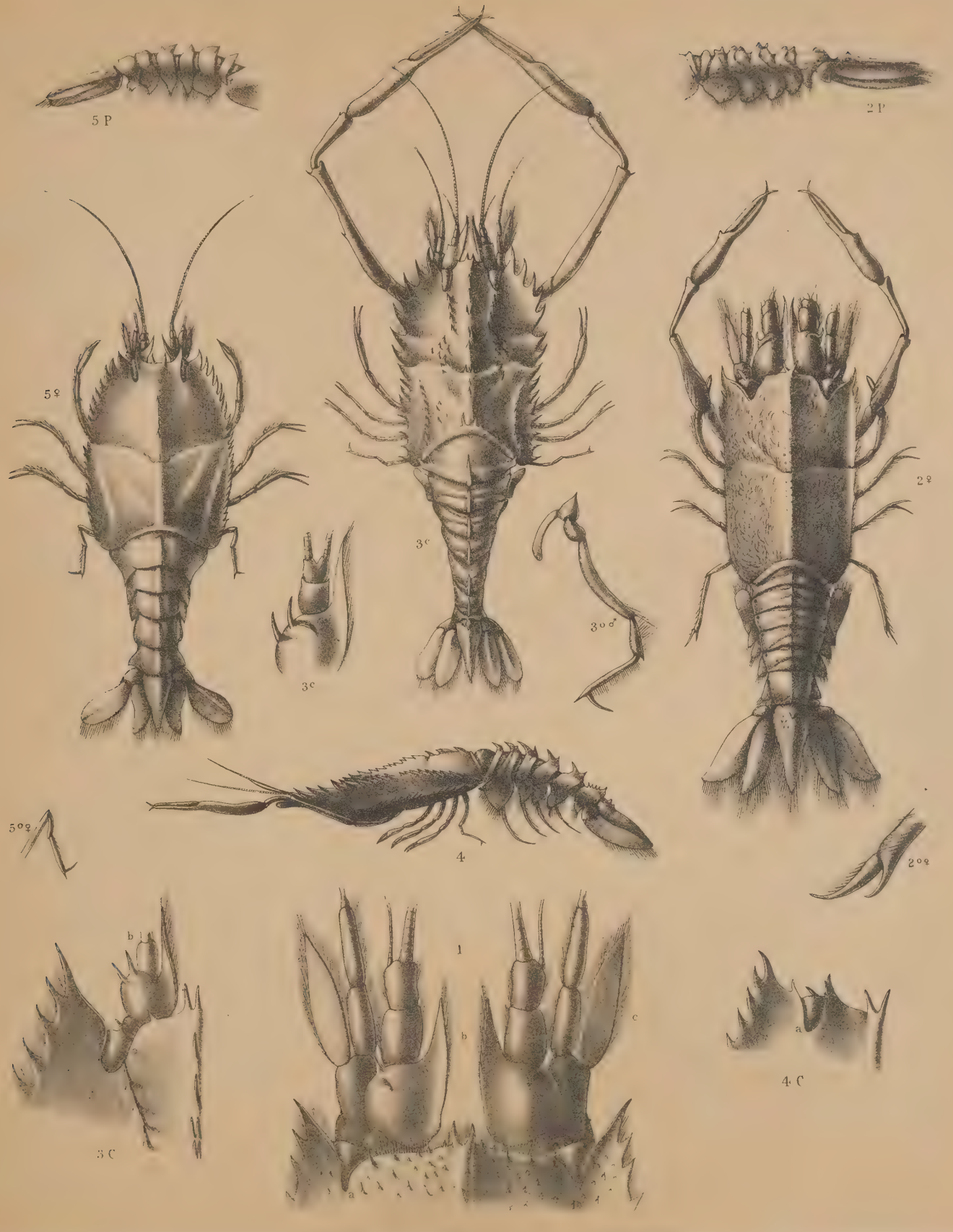
Pentacheles lævis (p. 144).

„ 4c. Anterior portion of cephalon; dorsal surface, showing ocular notch with ophthalmopod.

„ 5 ♀. Dorsal view of female; enlarged twice.

„ 5P. Pleon; lateral view.

„ 5*o*, ♀. Posterior pair of pleopoda in female.



C.S.B ad nat. J. Hawkins. lith.

Brendon & Son, Plymouth, imp

1. PENTACHELES HELLERI. 3 & 4. PENTACHELES SUHMI.
2. „ OBSCURA. 5. „ LÆVIS.

PLATE XVI.

PLATE XVI.

Pentacheles gracilis (p. 146).

Fig. 1, ♀. Dorsal view of the female; enlarged one and three-quarter times.

,, 1c. Part of the anterior portion of the cephalon; enlarged, showing the ocular notch (*a*), with the position of the ophthalmopod traced beneath; first antenna (*b*); second antenna (*c*).

,, 1*o*. Posterior pair of pereiopoda of female.

,, 2. Lateral view of the same animal.

Stereomastis auriculata (p. 159).

(*Pentocheles auriculata* on Plate.)

,, 3, ♀. Dorsal view of the female.

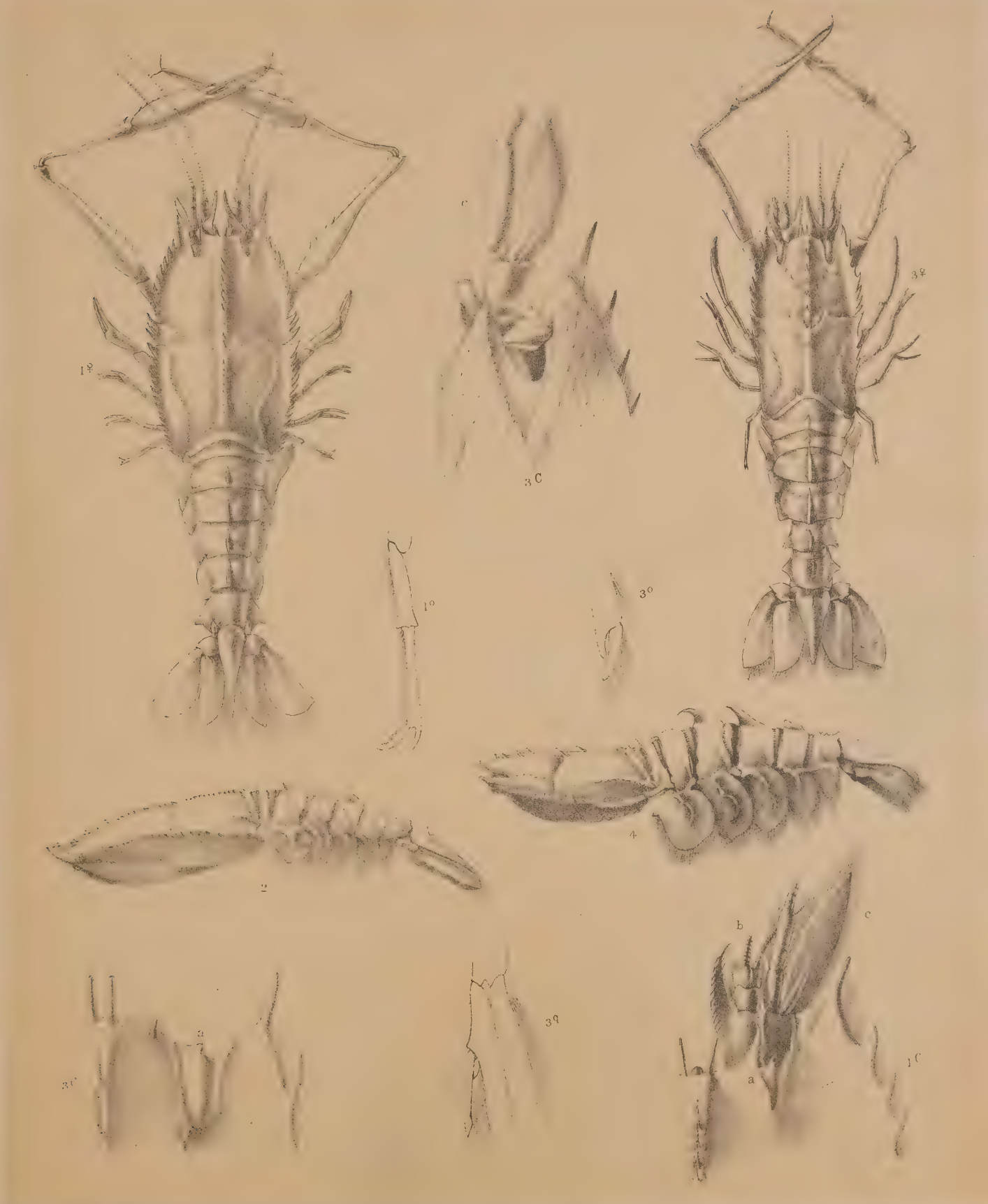
,, 3c. Anterior portion of the dorsal surface of the cephalon, showing the ocular notch with the ophthalmopod (*a*).

,, 3c″. Anterior portion of the cephalon, showing the lateral and under view, ophthalmopod (*a*), and second antenna (*c*).

,, 3*o*. Chela of posterior pereiopod; female.

,, 3*q*. Second pair of pleopoda.

,, 4. Lateral view of the same animal.



C.S.Bad nat. del. Hawkins, lith

Brendon & Son, Plymouth imp

1. PENTOCHELES GRACILIS ♀ (DORSAL)
2. " " (LATERAL)
3. PENTOCHELES AURICULATA ♀ (DORSAL)
4. " " (LATERAL)

PLATE XVII.

PLATE XVII.

Pentacheles euthrix, female; enlarged one and three-quarter times (p. 149).

(*Pentocheles enthrix* on Plate).

c. Cephalon, showing ophthalmopoda (a,a); first pair of antennæ (b,b); second pair of antennæ (c,c).

c′. Cephalon, one side of frontal aspect; a, ophthalmopoda; b,c, antennæ removed.

c‴. Cephalon, under surface, showing ophthalmopod (a); first antenna (b); second antenna (c); phymacerite (op).

c. Second antenna; *op*, phymacerite.

o′. Fifth pereiopod, under surface of terminal chela.

o″. Fifth pereiopod, upper surface of terminal chela.

P. Pleon; lateral view.

p,♀. First pleopod.

q. Second pleopod.

C.S.B. ad. nat., J. Hawkins, lith. Brendon & Son, Plymouth, imp.

PENTOCHELES ENTHRIX. ♀

PLATE XVIII.

PLATE XVIII.

Willemœsia leptodactyla; enlarged one and a half times (p. 163).

p. Pleon; lateral view.
d. Siagon or mandible; from the inside.
e. First siagnopod or first maxilla.
f. Second siagnopod or second maxilla.
g. Third siagnopod or maxilliped.
h. First gnathopod.
i. Second gnathopod.
k. Coxa and basis of first pereiopod, showing mastigobranchial lash and podobranchial plume.
k″. Chela of first pereiopod.
k‴. Podobranchia; enlarged.
k⁗. Series of small plates on the inner margins of pollex and dactylos.

C.S.B. ad nat. J. Hawkins, lith.

Brendon & Son, Plymouth, imp.

WILLEMOESIA TEPTODACTYLA.

PLATE XIX.

PLATE XIX.

Willemœsia leptodactyla (p. 163).

c. Cephalon, dorsal aspect. Large variety; enlarged (p. 169).

c″. Cephalon, dorsal aspect. Type specimen.

c‴. Inferior aspect of the anterior extremity of cephalon, showing first and second pairs of antennæ, siagon, third pair of siagnopoda, and first pair of gnathopoda, all in position.

c⁗. Metope or facial region, showing ophthalmopoda (*a*,*a*), position of first pair of antennæ (*b*,*b*), position of second pair of antennæ (*c*,*c*).

b. Coxa of first antenna with ophthalmopod (*a*), in position.

b. The same enlarged, having upper surface partially removed to show the internal structure of the auditory apparatus (*ac*).

c. Second antenna; view from the upper surface, showing the reversed position of the extremity of the phymacerite (*ot*).

o. Posterior pair of pereiopoda of male, showing the foramen in the coxa for the passage of the vas deferens.

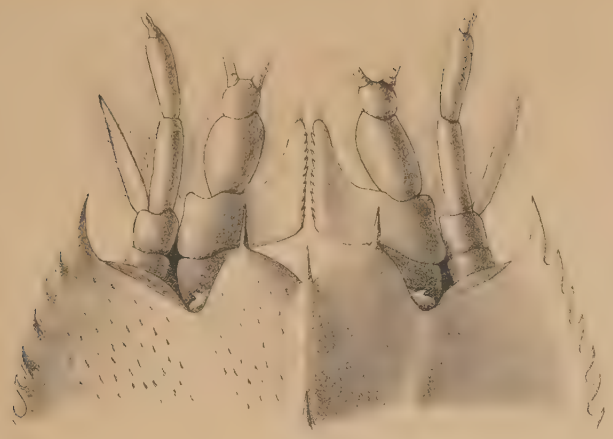
p, ♂. First pleopod of male, in relative position.

q, ♂. Second pleopod of male, showing two stylamblydes.

q, ♀. Second pleopod in female, showing one stylamblys.

P. Pleon; lateral view.

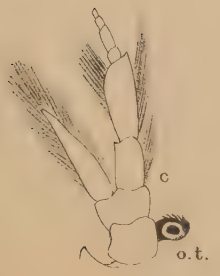
plc. Internal dental apparatus at the pyloric extremity of stomach.

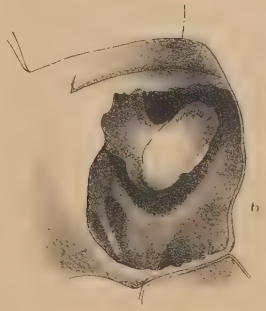


C

C''

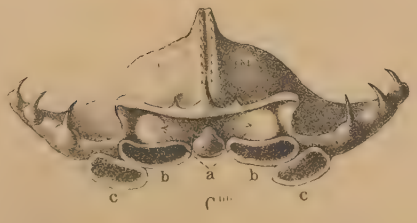
P





a.c.

C'''



C'''

WILLEMOESIA TEPTODACTYLA.

PLATE XX.

PLATE XX.

Willemœsia leptodactyla (p. 163).

Fig. 1. Pereion, with lateral wall of the carapace removed to show the position and arrangement of the branchiæ.

- *c.* Metope or facial region, showing on one side the relative positions of the ophthalmopod (*a*), and first (*b*) and second antennæ (*c*), from within.
- *d*, *d.* Siagones or mandibles (the synaphipod should have only two joints).
- *d''*, *d''*. Metastomata.
- *ma.* Cheiloglossa, as seen between the mandibles.
- *m.* Third pair of pereiopoda with mastigobranchial lash and podobranchial plume.
- *m'''*. One of the hairs and spines from the mastigobranchia; enlarged.
- *m''*. Section of a podobranchial plume.

,, 2. Ovum enlarged, showing advanced condition of the embryo.

C.S.B. ad nat., J.Hawkins.lith

Brendon & Son, Plymouth, imp

1. WILLEMOESIA LEPTODACTYLA.
2. " " (OVUM WITH EMBRYO)

PLATE XXI.

PLATE XXI.

Phoberus tenuimanus, nat. size (p. 171).

(*Acanthacaris tenuimana* on Plate.)

a,a. Ophthalmopoda.
c. Cephalon; *b*, first antenna, left side; *c*, second antenna, right side.
c. Peduncle of second antenna, seen on the lower side.
k. Chela of first pereiopod, left side.
k'. Mastigobranchial leaf of same with podobranchial plume attached.
k''. Section of branchial plume.
o. Chela of posterior pereiopod.
p. First pleopod.
q. Second pleopod.
v,z,v. Rhipidura; z, telson; *vv*, posterior pair of pleopoda.

C.S.B. ad. nat. J. Hawkins, lith.

Brendon & Son, Plymouth, imp

ACANTHACARIS TENUIMANA.

PLATE XXII.

PLATE XXII.

Phoberus tenuimanus (p. 171).

(*Acanthocaris tenuimana* on Plate.)

Pereion, with the lateral wall of the carapace removed to show the natural position and arrangement of the branchiæ; *i*, second gnathopod; *k–o*, pereiopoda.

Section of a set of branchial plumes and mastigobranchiæ; *mb*, mastigobranchiæ; *pdb*, podobranchia; *arb*, *arth*, anterior and posterior arthrobranchiæ; *plbr*, pleurobranchia. Above this figure are seen portions of the anterior and posterior arthrobranchia, showing their approximation, *in situ*.

d. Siagon (or mandible); from the inside.
e. First siagnopod.
f. Second siagnopod.
g. Third siagnopod.
h. First gnathopod, with basecphysis, mastigobranchial plate and podobranchial plume.
i. Second gnathopod, with basecphysis, mastigobranchial plate, and podobranchial plume.

C.S.B. ad nat. J. Hawkins lith.

Brendon & Son, Plymouth, imp.

ACANTHOCARIS TENUIMANA, (BRANCHIA &c.)

PLATE XXIII.

PLATE XXIII.

Nephropsis rosea (p. 178).

Fig. 1. Lateral view of a specimen; enlarged one and a half times.

,, 2. Dorsal view.

,, 1*e*. First siagnopod.

,, 1*f*. Second siagnopod.

,, 1*g*. Third siagnopod.

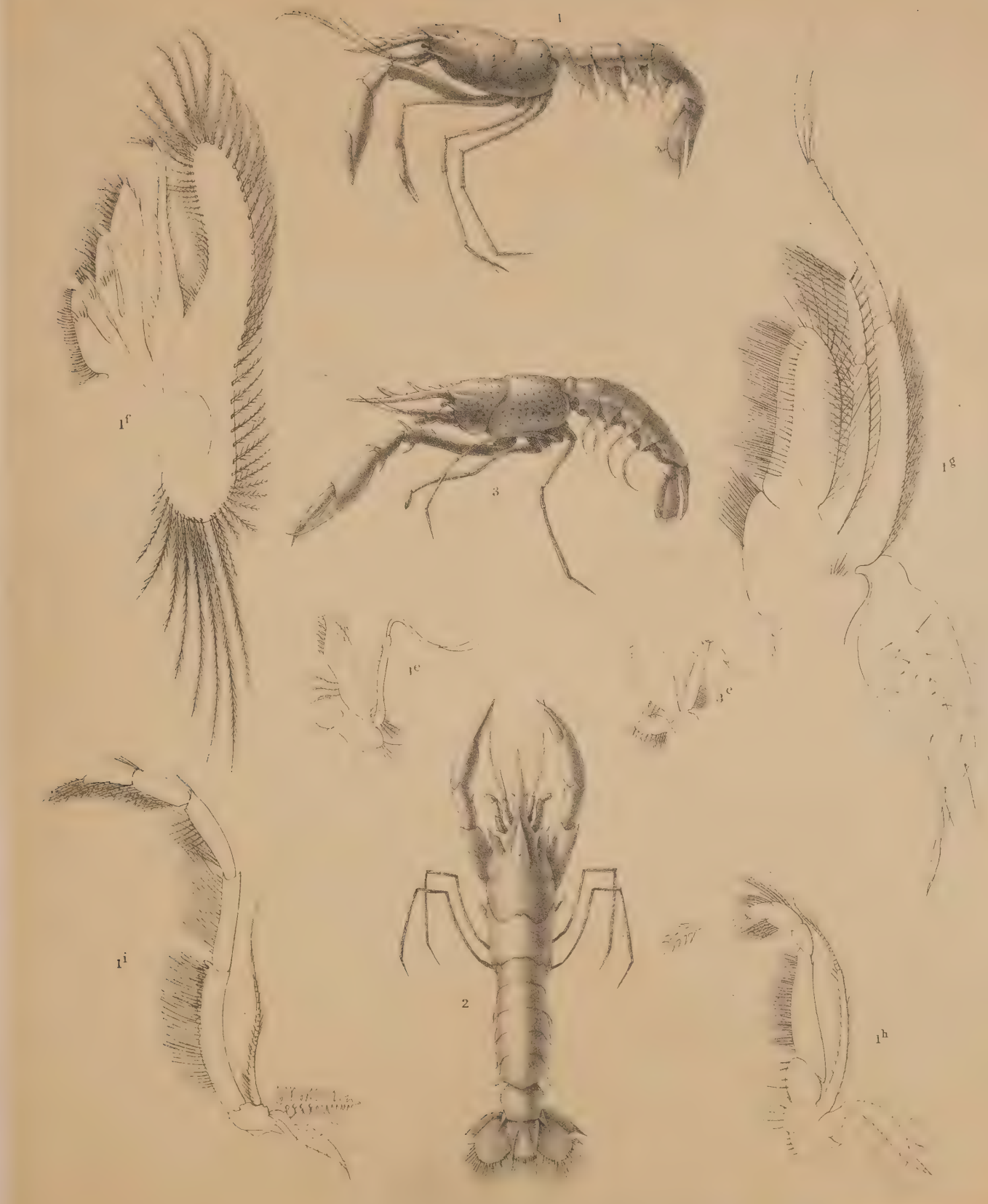
,, 1*h*. First gnathopod; one of the apical spines enlarged.

,, 1*i*. Second gnathopod.

Nephropsis suhmi (p. 181).

,, 3. Lateral view of the specimen; enlarged one and a half times.

,, 3*e*. First siagnopod.



C S B ad nat., J Hawkins, lith

Brendon & Son, Plymouth, imp

1–2. NEPHROPSIS ROSEA.
3. " SUHMI.

PLATE XXIV.

PLATE XXIV.

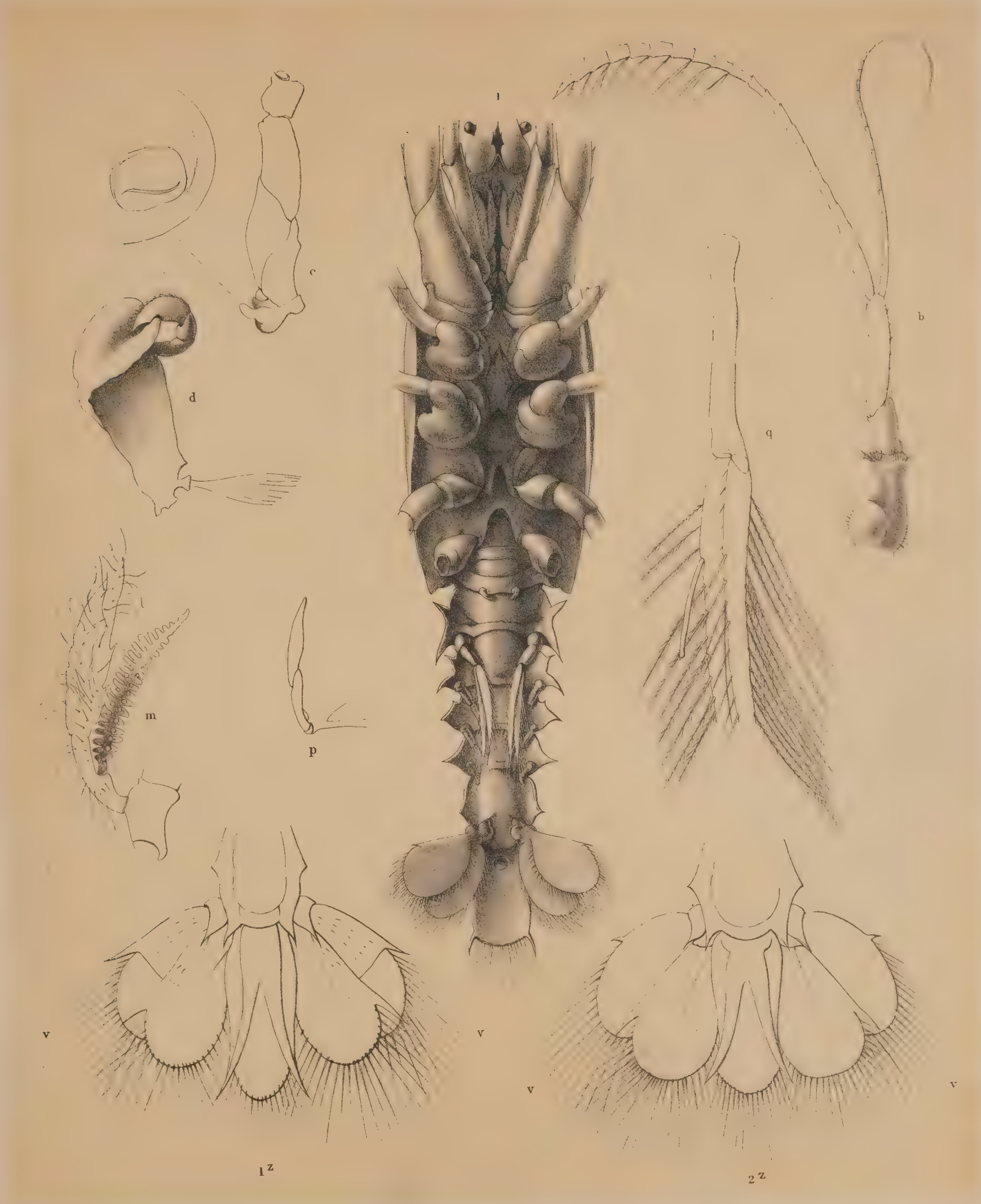
Nephropsis rosea (p. 178).

Fig. 1. Ventral view; enlarged.

b. First antenna.
c. Peduncle of the second antenna, showing the phymacerite and diagram of its extremity.
d. Siagon or mandible; seen from within.
m. Coxa of the third pereiopod, having the mastigobranchia with the podobranchial plume attached.
p. First pleopod, probably of male.
q. Second pleopod, with stylamblys.
v.z.v. Rhipidura; z, telson; *v,v,* posterior pair of pleopoda.

Nephropsis suhmi (p. 181).

„ 2*v.z.v.* Rhipidura; z, telson; *v,v,* posterior pair of pleopoda.



C.S.B ad. nat. J.Hawkins, lith.

Brendon & Son, Plymouth, imp.

1. NEPHROPSIS ROSEA.
2. " SUHMI.

PLATE XXV.

PLATE XXV.

Nephrops thomsoni, nat. size (p. 185).

Fig. 1, ♂. Dorso-lateral view of the male.

,, 2, ♀. Dorso-lateral view of the female.

,, 3, *v.z.v.* Rhipidura; *vv*, sixth pair of pleopoda; z, telson.

C.S.B. ad nat., J. Hawkins, lith.

Brendon & Son, Plymouth, imp.

1. NEPHROPS THOMSONI, (MALE)
2. " " (FEMALE)
3. " " (RHIPIDURA.)

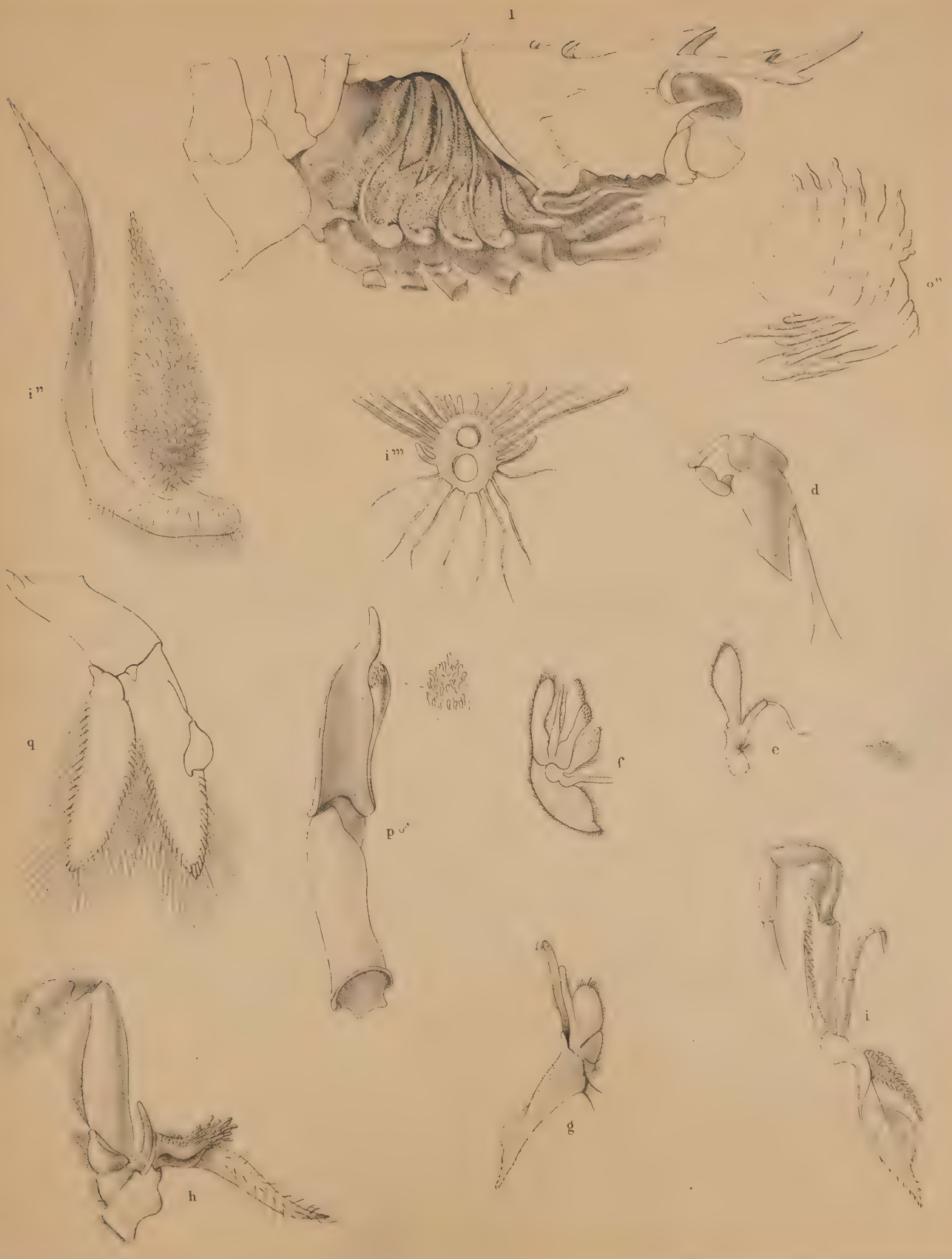
PLATE XXVI.

PLATE XXVI.

Nephrops thomsoni (p. 185).

Fig. 1. Carapace, with the lateral wall removed to show the branchiæ.

d. Siagon.
e. First siagnopod (basal plate probably wanting).
f. Second siagnopod.
g. Third siagnopod.
h. First gnathopod.
i. Second gnathopod.
i″. Mastigobranchia with podobranchial plume of same.
i‴. Section of the plume.
o″. Apex of the posterior pleurobranchial plume.
p, ♂. First pleopod of male, exhibiting cincinnuli.
q. Second pleopod with stylamblys.



C.S.B. ad. nat., J. Hawkins. lith. Brendon & Son, Plymouth. imp.

NEPHROPS THOMSONI.

PLATE XXVII.

PLATE XXVII.

Astacopsis paramattensis (p. 202).

Fig. 1. Dorso-lateral view, natural size.

„ 1*e*. First siagnopod; 1, 2, 3, 4, homologues of the four respective joints of the typical limb—coxa, basis, ischium, and meros; spines and hairs enlarged.

„ 1*f*. Second siagnopod, figures as before.

„ 1*g*. Third siagnopod, figures as before; *ec*, basecphysis.

„ 1*h*. First gnathopod, figures as above; 5 carpos, 6 propodos, 7 dactylos; *pb*, podobranchial plume; *arb*, arthrobranchial plume; *ec*, ecphysis.

„ 1*i*. Second gnathopod, figures as before; *pb*, podobranchia; *arb*, arthrobranchia.

„ 1*m''*. Podobranchia of third pereiopod attached to the mastigobranchial plate.

„ 1*m'''*. Section of the mastigobranchial plate and podobranchia of third pereiopod, with hairs from the surface of the former; magnified.

Astacopsis sydneyensis (p. 204).

„ 2. Dorsal view of the specimen; enlarged twice.

C.G.B ad.nat. del. Hanr...orth. Brendon & Son, Plymouth, imp

1. ASTACOPSIS PARARAMATENSIS.
2. „ SYDNEYENSIS.

PLATE XXVIII.

PLATE XXVIII.

Astacopsis spinifer (p. 194).

The lateral wall of the carapace has been removed to show the branchial arrangement; podobranchiæ removed to show the plan of the branchiæ beneath; arthrobranchiæ removed from the first two pairs of pereiopoda to show their position and that of the pleurobranchiæ.

k. First pair of pereiopoda.
pdb. Podobranchiæ.
arb. Arthrobranchiæ.
plb. Pleurobranchiæ.
mt. Movable appendages, probably the rudiments of the foliaceous appendages that form the ventral incubatory pouch in certain genera.
d. Siagon or mandible; 1 coxa, 2 basis, 3 terminal joint.
e. First siagnopod; 1 coxa, 2 basis, 3 ischium, 4 terminal joint.
f. Second siagnopod; 1 coxa, which carries the mastigobranchial plate; other numerals as before.
g. Third siagnopod; numerals as before; *ec*, a multiarticulate ecphysis of the basis.
h. First gnathopod; 1, 2, 3, as before; 4 meros, 5 carpos, 6 propodos.
i. Second gnathopod; numerals as before; *ec*, ecphysis; *pdb*, podobranchia.

pdbr. Podobranchia.
arb.a. Anterior arthrobranchia.
arb.p. Posterior arthrobranchia.
plbr. Pleurobranchia.

} Arranged in a diagrammatic section.

C.S.B. ad nat. J. Hawkins, lith.

Brendon & Son, Plymouth, imp.

ASTACOPSIS SPINIFER.

PLATE XXIX.

PLATE XXIX.

Spongicola venusta (p. 213).

Fig. 1, ♀. Lateral view (length, 25 mm.); enlarged four times.

,, 2*v*. Brephalos, in Zoea form (p. 216).

,, 3c. Cephalon. The lateral wall of carapace removed to show branchiæ in position.

,, *e*. First siagnopod.

,, *f*. Second siagnopod.

,, *g*. Third siagnopod.

,, *h*. First gnathopod.

,, *i*. Second gnathopod.

,, *i''*. Coxa, basis, and part of ischium of the same enlarged; *ec*, rudimentary basecphysis; *mb*, rudimentary mastigobranchia; *arthb*, arthrobranchia.

,, *i*. Branchiæ of same; *mb*, mastigobranchiæ; *a*,*p*, anterior and posterior arthrobranchiæ; *pl*, pleurobranchia; *pdb*, podobranchia.

,, *k*. Branchiæ of first pereiopod, letters as before.

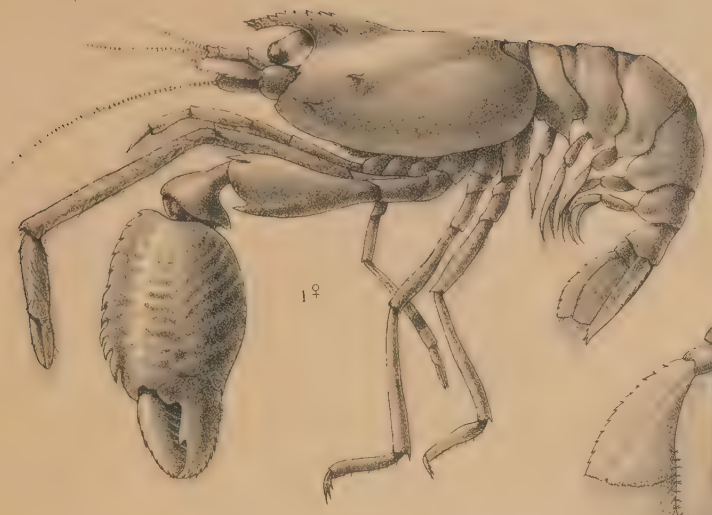
,, *l*. Branchiæ of second pereiopod, letters as before.

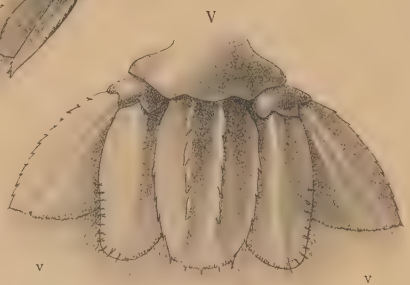
,, *m*. Branchiæ of third pereiopod, letters as before.

,, *n*. Branchiæ of fourth pereiopod, letters as before.

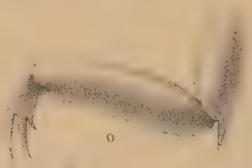
,, *o*, *pl*. Pleurobranchia of the fifth pereiopod.

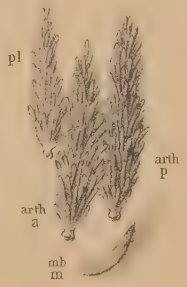
,, *v*, z, *v*. Rhipidura; *v*,*v*, sixth pair of pleopoda; z, telson.





z





SPONGICOLA VENUSTA.

PLATE XXX.

PLATE XXX.

Stenopus hispidus, female (length, 45 mm.); enlarged twice (p. 211).

e First siagnopod.
f. Second siagnopod.
g. Third siagnopod.
h. First gnathopod.
i. Basal part of second gnathopod; enlarged, showing basecphysis, mastigobranchia, and arthrobranchial plume.
p. First pleopod.
q. Second pleopod.
h–o. Diagrammatic plan of the branchial arrangement and proportions.

C.J.F. ad. nat. J.Hawkins lith.

Brendon & Son. Plymouth. imp.

STENOPUS HISPIDUS.

PLATE XXXI.

PLATE XXXI.

Penæus canaliculatus, var. *japonicus* (p. 245).

a. Ophthalmopod.

b. First antenna.

c. Second antenna.

d. Mandible or siagon.

e. First siagnopod or first maxilla.

f. Second siagnopod or second maxilla.

g. Third siagnopod or first maxillipede.

h. First gnathopod.

i. Second gnathopod.

i, ec. Section of the basecphysis of same.

C S B ad nat. J Hawkins, lith. Brendon & Son, Plymouth, imp.

PENÆUS CANALICULATUS.

PLATE XXXII.

PLATE XXXII.

Penæus canaliculatus (p. 243).

Fig. 1, ♂. Male specimen; lateral view, enlarged twice.

„ 1″, ♂. Ventral surface, showing first pair of pleopoda, with petasma.

„ 2, ♀. Female specimen; lateral view.

„ 2″, ♀. Ventral surface of female, showing thelycum.

Penæus canaliculatus, var. *australiensis* (p. 248).

„ 3, ♀. Female specimen.

„ 3″, ♀. Ventral surface of female.

Penæus canaliculatus, var. *japonicus* (p. 247).

„ 4, ♀. Ventral surface of female, showing thelycum.

1. PENÆUS CANALICULATUS. ♂
1.″ Dº Dº (VENTRAL) ♂
2. Dº Dº
4. Dº Dº VAR. JAPONICUS (VENTRAL) ♀
2.″ PENÆUS CANALICULATUS. (VENTRAL) ♀
3. Dº Dº VAR. AUSTRALIENSIS. ♀
3.″ Dº Dº Dº ♀

PLATE XXXIII.

PLATE XXXIII.

Penæus velutinus (p. 253).

Fig. 1. Lateral view, enlarged twice.

,, 1″. Ventral aspect of male; *p*, *p*, first pair of pleopoda, with petasma attached.

,, 1‴. Ventral aspect of female; *p*, *p*, first pair of pleopoda.

,, 1z. Telson.

Penæus indicus (p. 248).

,, 2. Lateral view of male.

,, 2, *p*, *p*. First pair of pleopoda detached, with petasma connected.

,, 2*v*, z, *v*. Rhipidura; z, telson; *v*, *v*, sixth pair of pleopoda.

C.S.B. ad nat. W.Purkiss lith.

Hanhart imp.

1. PENÆUS VELUTINUS
1'' Dº Dº (VENTRAL) ♂
1''' Dº Dº (VENTRAL) ♀

2. PENÆUS INDICUS.

PLATE XXXIV.

PLATE XXXIV.

Penæus monodon (p. 250).

Fig. 1. Lateral view.

„ 1″, ♂. Ventral surface of male, showing petasma.

„ 1‴, ♀. Ventral surface of female, showing thelycum.

Penæus incisipes (p. 257).

„ 2, ♂. Lateral view of male.

„ 2″, ♂. Ventral surface of male, showing petasma.

„ 2‴, ♀. Ventral surface of female, showing thelycum.

C.S.B. ad nat. Edwin Wilson lith.

Hanhart imp.

1. PENÆUS MONODON.

1″.	Dº.	Dº.	(VENTRAL)	♂
1‴.	Dº.	Dº.	Dº.	♀

2. PENÆUS INCISIPES. ♂

2″.	Dº.	Dº.	(VENTRAL)	♂
2‴.	Dº.	Dº.	Dº.	♀

PLATE XXXV.

PLATE XXXV.

Penæus anchoralis (p. 258).

Fig. 1. Lateral view, enlarged twice.

„ 1″. Ventral aspect of male, with the first pair of pleopoda and petasma attached.

„ 1‴. Ventral aspect of female, showing thelycum.

„ 1z. Telson.

Penæus philippinensis (p. 261).

„ 2. Female specimen.

„ 2″. Ventral aspect of female, with first pair of pleopoda thrown back.

„ 3. Male specimen.

„ 3″. Ventral aspect of male, with first pair of pleopoda and petasma attached.

C.S.B. ad nat. Edwin Wilson lith. Hanhart imp.

1. PENÆUS ANCHORALIS.
1". Dº Dº (VENTRAL) ♂
1"'. Dº Dº Dº ♀
2. PENÆUS PHILIPPINENSIS. ♀
2". Dº Dº (VENTRAL) ♀
3. Dº Dº ♂
3". PENÆUS PHILIPPINENSIS, (VENTRAL) ♂

PLATE XXXVI.

PLATE XXXVI.

Penæus fissurus (p. 263).

Fig. 1. Female specimen.

,, 1″. Ventral aspect of female, showing thelycum.

,, 1*p*. First pleopod, detached.

,, 1z. Telson.

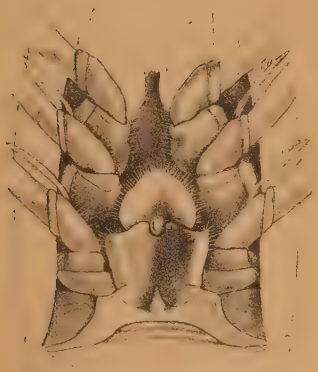
Penæus rectacutus (p. 266).

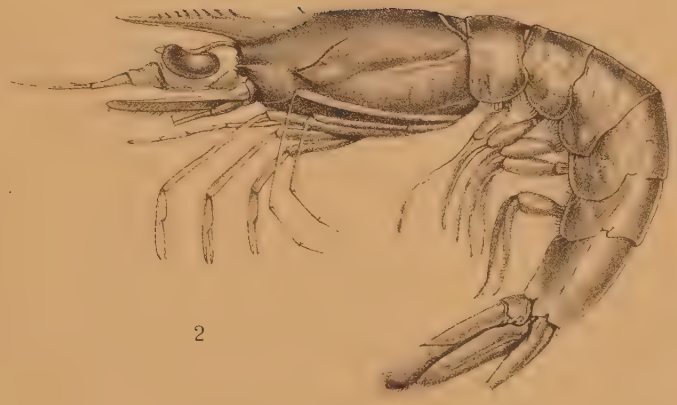
,, 2. Female specimen.

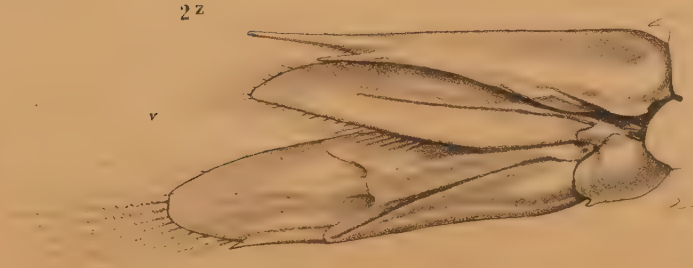
,, 2″. Ventral aspect of female, showing thelycum.

,, 2*p*. First pleopod, detached.

,, 2z,*v*. Rhipidura, seen laterally; z, telson; *v*, sixth pleopod.







1. PENÆUS FISSURUS. ♀
1". Dº Dº (VENTRAL)

2. PENÆUS RECTACUTUS. ♀
2". Dº Dº (VENTRAL)

PLATE XXXVII.

PLATE XXXVII.

Penæus serratus (p. 268).

Fig. 1. Lateral view.

„ 1*a*. Ophthalmopod.

„ 1*b*. First antenna.

„ 1″, ♂. Ventral aspect of male, with first and second pairs of pleopoda attached and thrown back, with petasma attached to former.

„ 1*q*. Part of second pair of pleopoda, detached.

„ 1‴, ♀. Ventral aspect of female.

„ 1*z*. Telson.

„ 1*br*. Branch of branchial plume, and secondary branch; detached.

Penæus canaliculatus, var. *japonicus* (p. 245).

„ 2*br*. Branch of branchial plume, and secondary branch; detached.

Hemipenæus speciosus (p. 303).

„ 3*br*. Branch of branchial plume, and secondary branch; detached.

C.S.B. ad nat. W. Purkiss lith.

1. PENÆUS SERRATUS. 2. PENÆUS CANALICULATUS. var. JAPONICUS.
3. HEMIPENÆUS SPECIOSUS.

PLATE XXXVIII.

PLATE XXXVIII.

Philonicus pectinatus, male (p. 279).

Fig. *o*, *o*. Posterior pair of pereiopoda; basal portion; *p*, *p*., first pair of pleopoda, with petasma expanded and united in the median line.

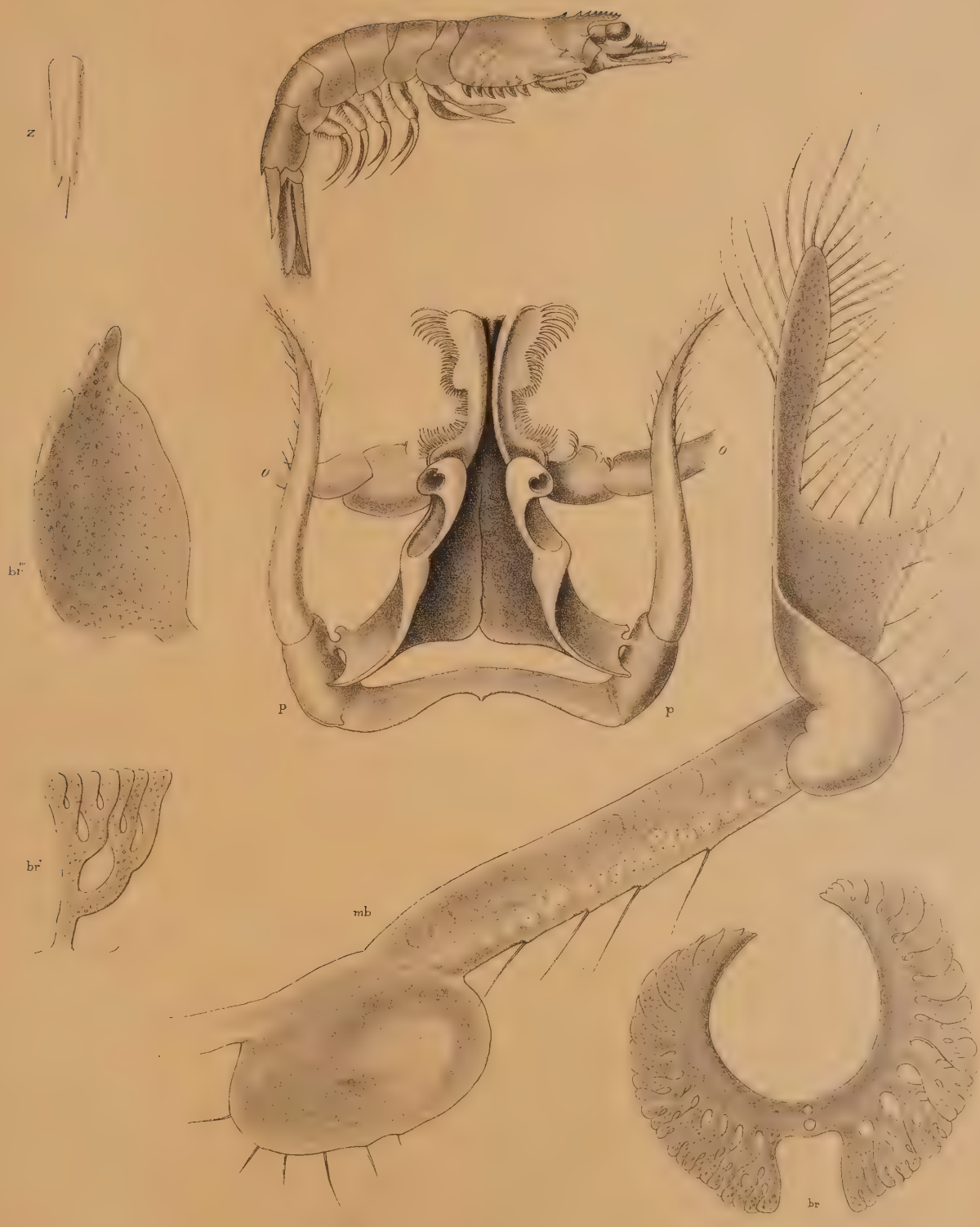
z. Telson.

br. Branchial plume; seen in section.

br''. Secondary branch of same; taken from the base.

br'''. Secondary branch of same; taken from the apex.

mb. Mastigobranchia.



C.S.B. ad nat. W. Purkess lith.

Hanhart imp.

PHILONICUS PECTINATUS.

PLATE XXXIX.

PLATE XXXIX.

Philonicus mülleri (p. 275).

Fig. 1. Female specimen.

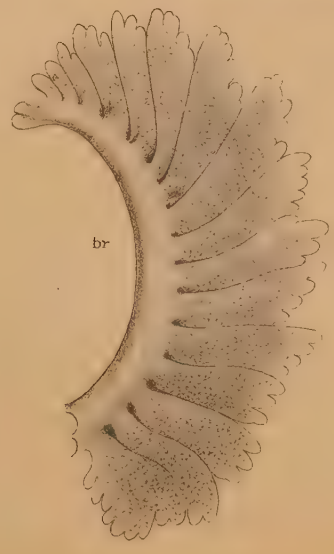
„ 1″. Ventral aspect of female ; *p*, *p*, first pair of pleopoda.

„ 2. Male specimen.

„ 2″. First pair of pleopoda of male, with petasma folded and attached.

br. Primary branch of branchial plume.

br″. Secondary branch of branchial plume.



C.S.B. ad nat. W. Purkiss lith.

Hanhart imp.

1. PHILONICUS MÜLLERI ♀
1". Dº Dº (VENTRAL) ♀
2. Dº Dº ♂
2". Dº Dº (VENTRAL) ♂

PLATE XL.

PLATE XL.

Artemesia longinaris (p. 281).

Fig. 1. Lateral view.

,, 2, ♀. Ventral aspect of female.

d. Mandible or siagon.

e. First maxilla or first siagnopod.

f. Second maxilla or second siagnopod.

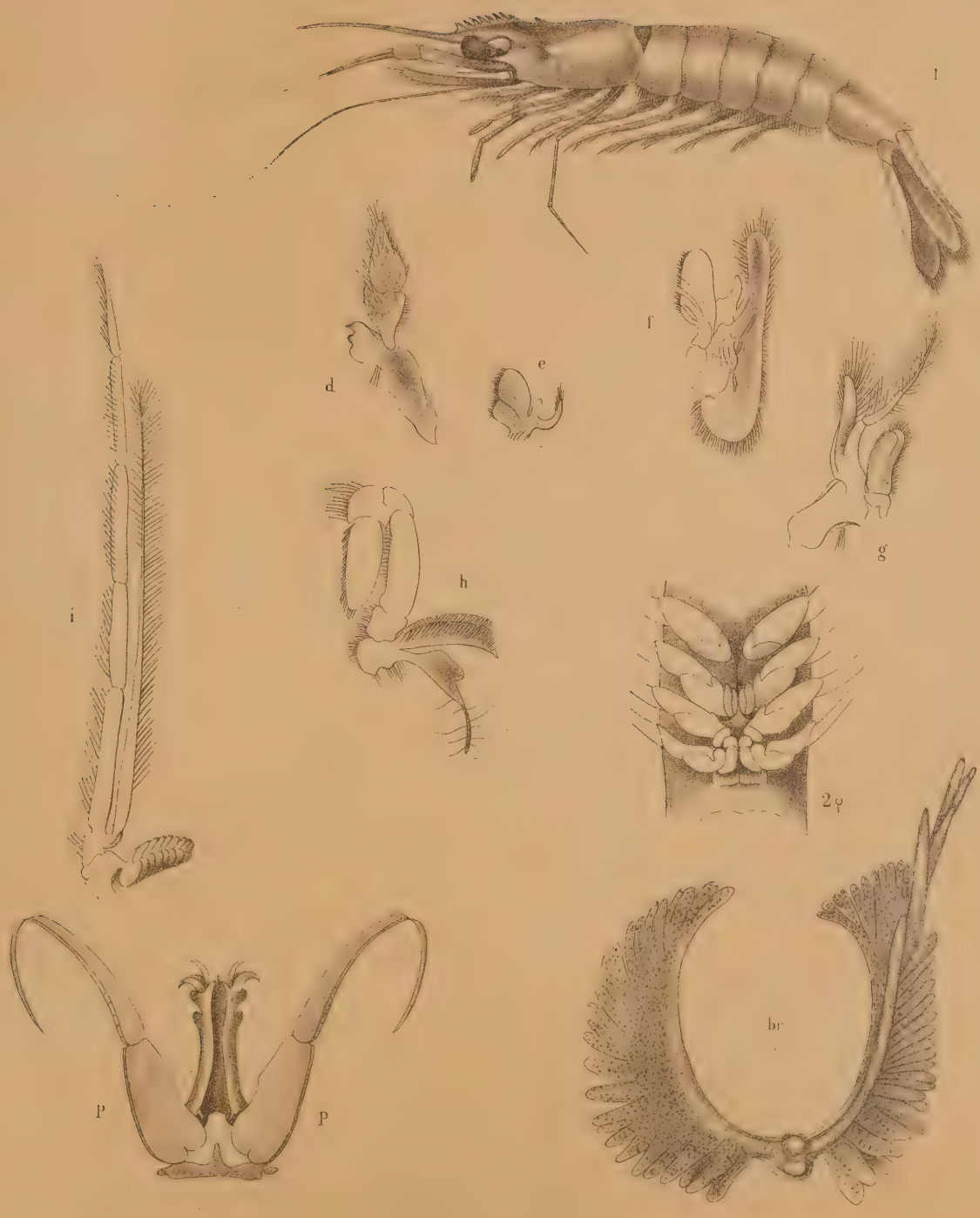
g. First maxillipede or third siagnopod.

h. First gnathopod.

i. Second gnathopod.

p, p. First pair of pleopoda of male, with petasma attached.

br. Branchial plume.



1. ARTEMESIA LONGINARIS.
2. Dº Dº (VENTRAL) ♀

PLATE XLI.

PLATE XLI.

Haliporus equalis (p. 285).

Fig. 1. Lateral view.

„ 1″, ♂. Ventral aspect of male. First pair of pleopoda, with petasma attached and thrown back.

„ 1‴, ♀. Ventral aspect of female, showing thelycum.

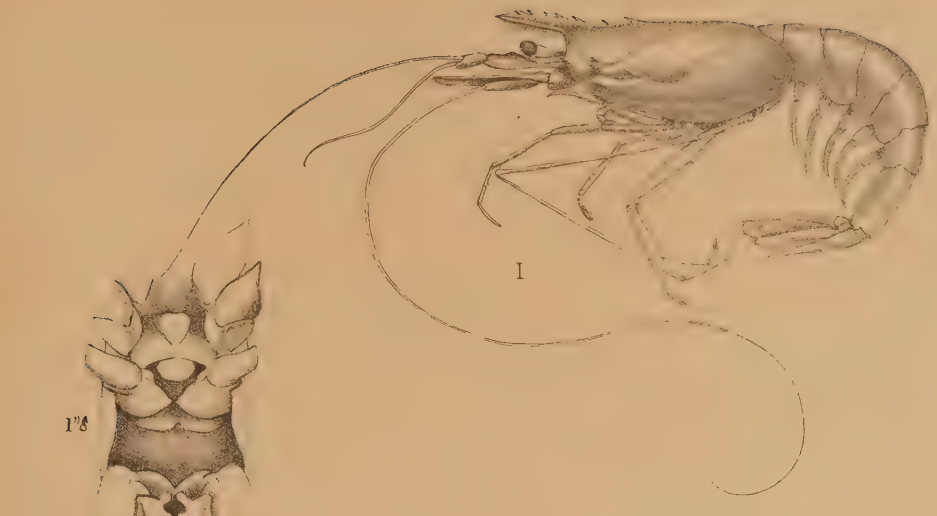
br. Branchiæ, seen in position.

br′. Last three somites of the pleon; the arthrobranchiæ of the third and fourth pairs of pereiopoda removed, to show the peculiar ducts that connect the pleurobranchiæ with their somites; *mb*, mastigobranchia of the third and fourth somites.

Haliporus obliquirostris (p. 286).

„ 2. Lateral aspect.

„ 2″, ♀. Ventral aspect of female.



C S B. ad nat. Edwin Wilson lith

Hanhart imp

1. HALIPORUS EQUALIS.

1". Dº Dº (VENTRAL) ♂

1"'. Dº Dº (VENTRAL) ♀

2. HALIPORUS OBLIQUIROSTRIS.

2". Dº Dº (VENTRAL) ♀

PLATE XLII.

PLATE XLII.

Haliporus curvirostris (p. 288).

Fig. 1. Lateral view.

Haliporus lævis (p. 289).

„ 2. Lateral view.

Haliporus neptunus (p. 291).

„ 3. Lateral view.

„ 3″ ♂. Ventral aspect of male. First pair of pleopoda with petasma, thrown forwards; second pair, directed backwards.

„ 3‴ ♀. Ventral surface of pereion of female, showing thelycum.

Philonicus lucasii (p. 277).

„ 4. Lateral aspect.

C.S.B. ad nat. W. Purkiss lith.

Hanhart imp

1. HALIPORUS CURVIROSTRIS. 3. HALIPORUS NEPTUNUS.
2. Dº LÆVIS. 3ᵇ Dº Dº (VENTRAL) ♂
3ᵐ Dº Dº (VENTRAL) ♀
4. PHILONICUS LUCASII.

PLATE XLIII.

PLATE XLIII.

Sicyonia sculpta (p. 294).

Fig. 1. Lateral view of female; enlarged two and a half times.

„ 1″. Rostrum.

„ 1z. Telson.

Sicyonia carinata (p. 294).

„ 2. Lateral view of male; enlarged twice.

„ 3. Dorsal view of same; enlarged twice.

„ 3*b*. First antenna.

„ 3*c*′. Second antenna, base of scaphocerite; under surface.

„ 3*c*″. Second antenna, base of scaphocerite; upper surface.

„ 3*c*‴. Second antenna; margin of scaphocerite.

„ 3*br*. Branchiæ; extremity of plumes, showing structure.

„ 3*q*. Second pleopod.

Sicyonia lancifer (p. 297).

„ 4. Lateral view of female; enlarged two and a quarter times.

„ 4″, ♀. Ventral aspect of pereion of female, showing thelycum.

„ 4z. Telson.

Sicyonia lævis (p. 298).

„ 5. Lateral view of female; enlarged two and a half times.

C.S.B. ad nat. J.C. Richards lith

Hanhart imp

1♀ SICYONIA SCULPTA.
2♂ Dº CARINATA.
3 Dº Dº (DORSAL.)
4♀ SICYONIA LANCIFER.
4"♀ Dº Dº (VENTRAL.)
5♀ Dº LÆVIS.

PLATE XLIV.

PLATE XLIV.

Hemipenæus spinidorsalis (p. 301).

Fig. 1. Lateral view; one-half enlarged.

„ 1″. Branchiæ, seen in position.

„ 1‴. Mastigobranchia, with podobranchial plume attached.

Hemipenæus gracilis (p. 302).

„ 2. Lateral view; one-half enlarged.

Hemipenæus speciosus (p. 303).

„ 3. Lateral view.

Hemipenæus virilis (p. 303).

„ 4. Lateral view.

1. HEMIPENÆUS SPINIDORSALIS.
2. Dº GRACILIS.
3. HEMIPENÆUS SPECIOSUS.
4 Dº VIRILIS.

PLATE XLV.

PLATE XLV.

Aristeus armatus (p. 312).

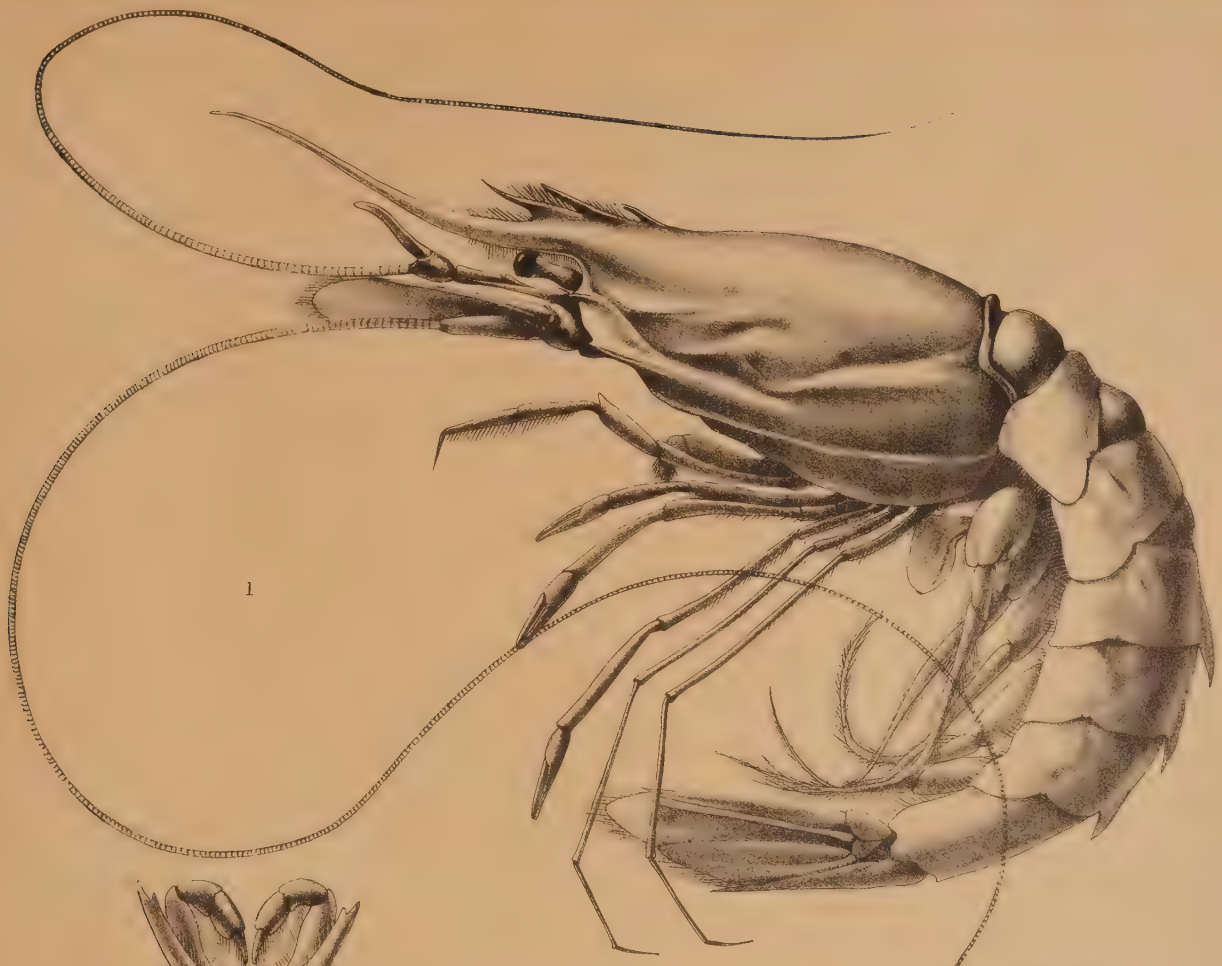
Fig. 1. Lateral aspect of male.

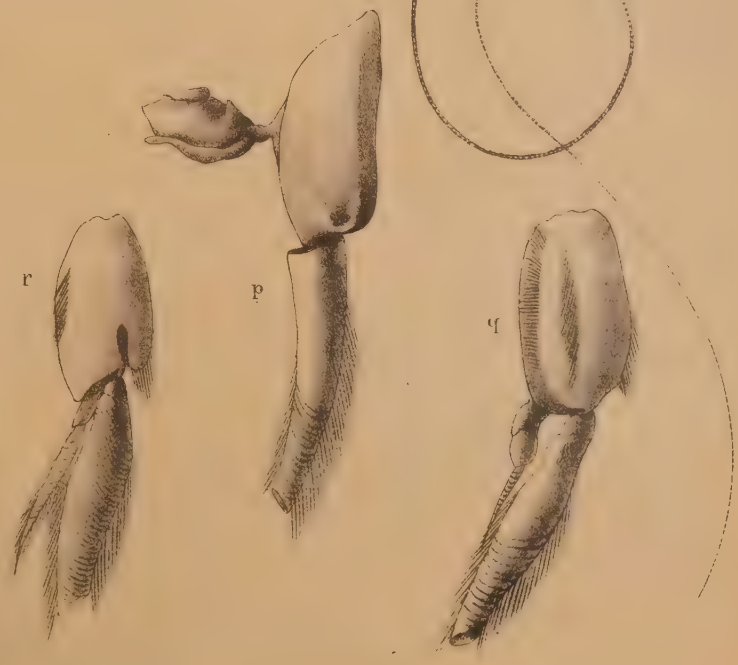
„ 2. Ventral aspect of another specimen.

p. First pleopod.

q. Second pleopod.

r. Third pleopod.





C.S.B. ad nat. J.Hawkins, lith. Hanhart imp.

1. ARISTEUS ARMATUS.
2. Dº Dº (VENTRAL) ♂

PLATE XLVI.

PLATE XLVI.

Aristeus armatus (p. 312).

d. Mandible or siagon.

ma. Metastomata.

e. First maxilla or first siagnopod.

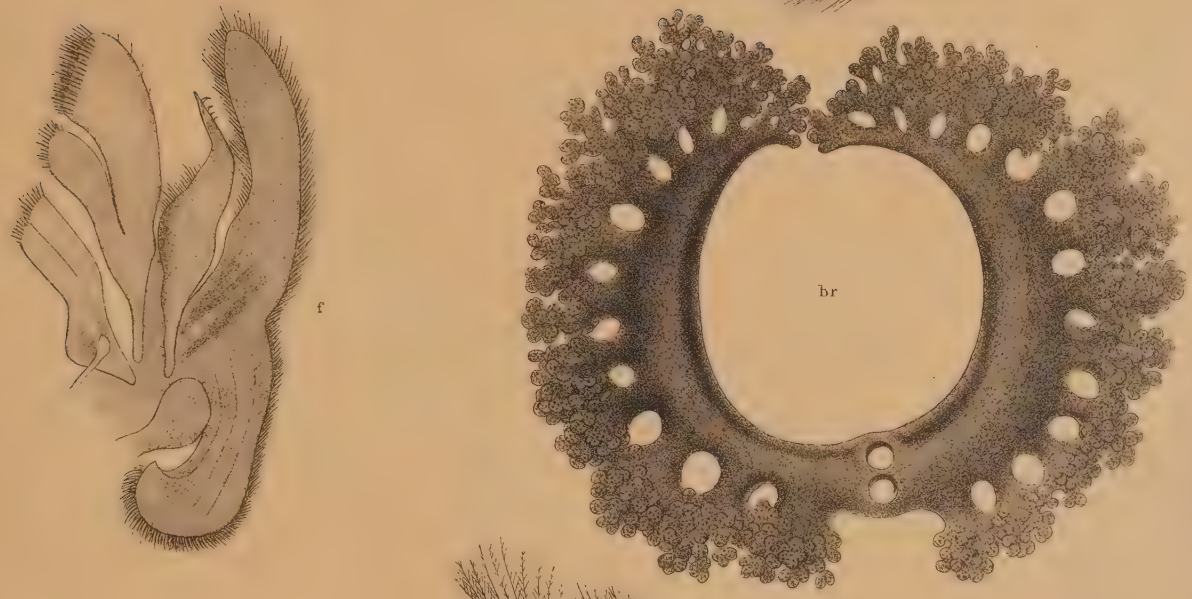
f. Second maxilla or second siagnopod.

g. Maxillipede or third siagnopod.

br. Branchial plume, seen in section.

br''. Secondary branch of branchial plume.

Fig. 1. *Aristeus?* (young) (p. 240).



C.S.B. ad nat. W. Purkiss, lith. Hanhart imp.

ARISTEUS ARMATUS.

l. Dº (Young.)

PLATE XLVII.

PLATE XLVII.

PENÆIDÆ (Development).

Fig. 1. *Aristeus* (?), in Megalopa stage (p. 241).

„ 1*k*. First pair of pereiopoda.

„ 2. *Aristeus* (?), younger Megalopa stage (p. 239).

„ 2*v*. Fifth somite and rhipidura.

„ 3. *Aristeus* (?), older Megalopa stage (p. 238).

„ 3*b*. First antenna.

„ 3*d*. Mandible, showing attachment of muscles.

„ 3*k*. First pereiopod.

PENÆIDÆ

PLATE XLVIII.

PLATE XLVIII.

PENÆIDÆ (Development).

Fig. 1. *Penæus;* Zoea stage (p. 237).

,, 2. *Penæus;* Megalopa stage. *v. v.* Sixth pair of pleopoda.

,, 2*g*. Third siagnopod or first maxillipede.

,, 2*h*. First gnathopod.

,, 2*m*. Third pereiopod.

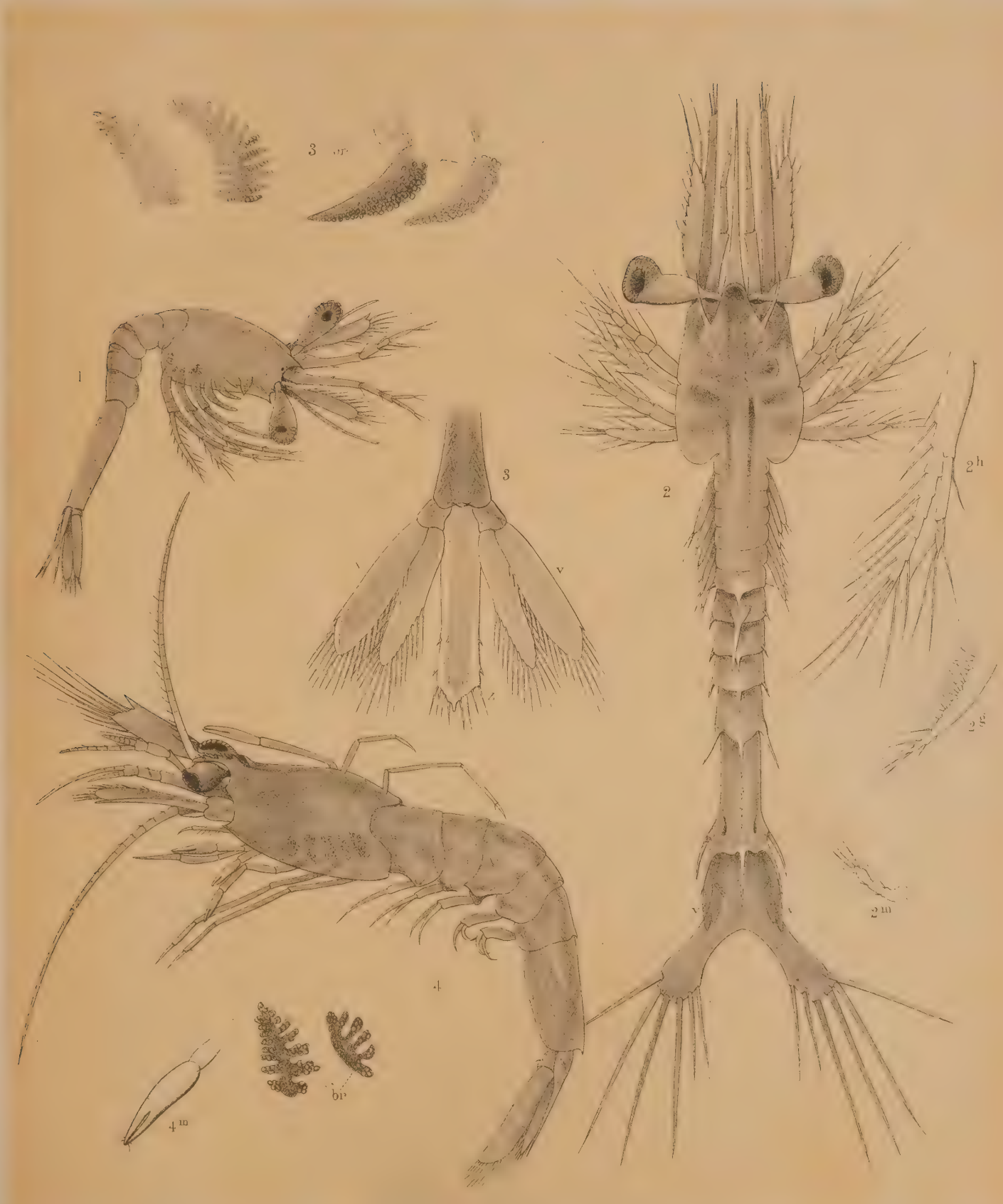
,, 3*br*. Branchiæ of a young *Penæus*.

,, 3*v*, z, *v*. Rhipidura of same.

,, 4. A young *Penæus*.

,, 4*m*. Chela of third pereiopod.

br. Early condition of branchial plume.



C.S.B ad nat

M.s Farlane & Erskine, Lith.rs Edin.r

PENÆIDÆ (DEVELOPMENT)

PLATE XLIX.

PLATE XLIX.

Hemipenæus semidentatus (p. 305).

Fig. 1. Lateral view of female.

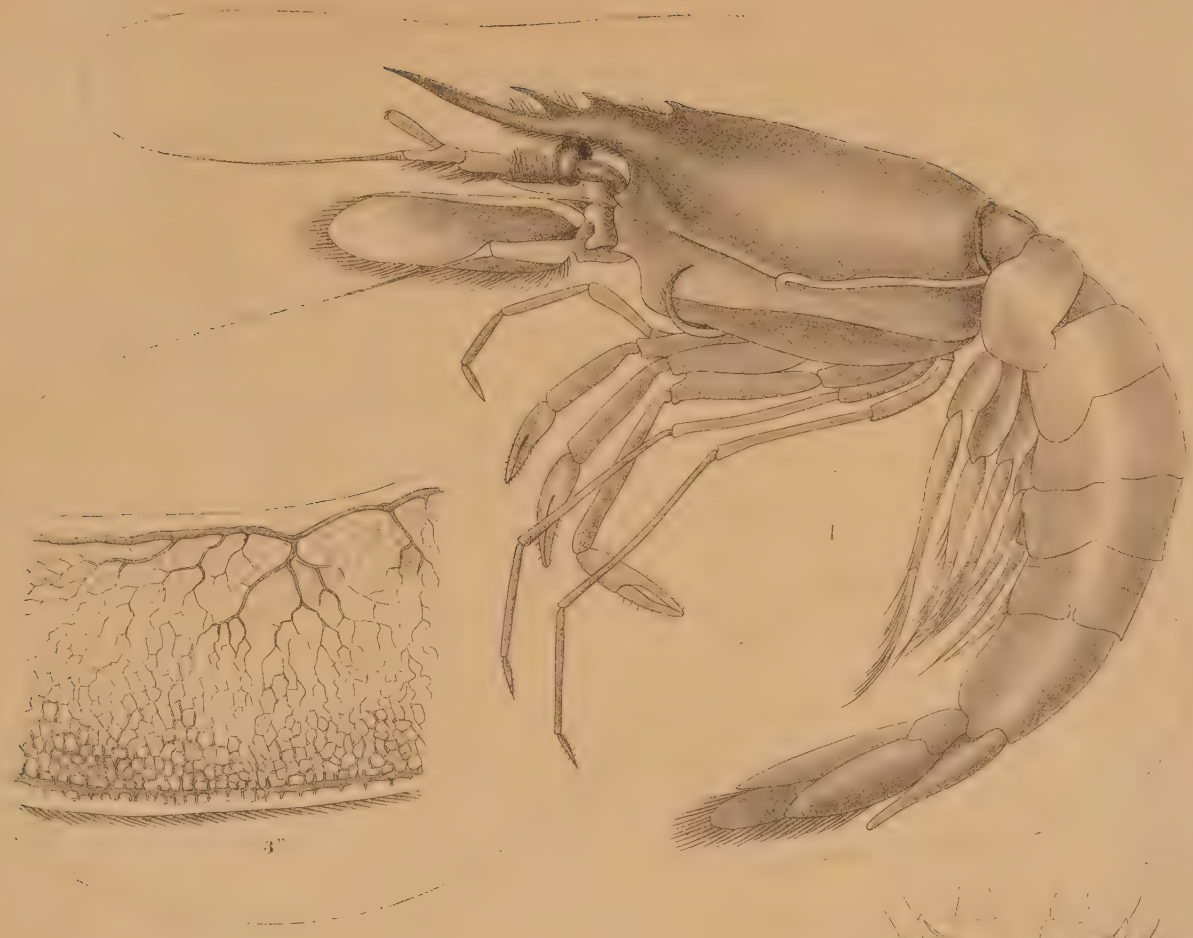
„ 1*br*. Branch of branchial plume.

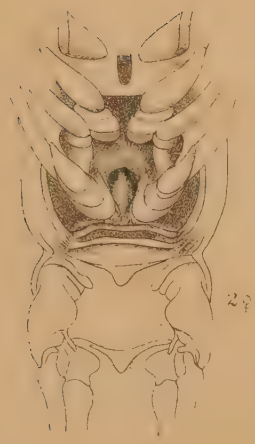
Hemipenæus tomentosus (p. 307).

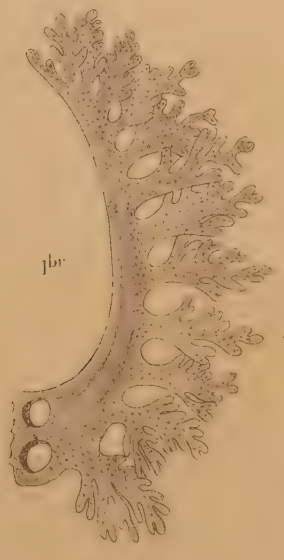
„ 2, ♀. Ventral aspect of female, showing hollow between pereiopoda.

„ 3, ♀. The same hollow part, containing a gelatinous mass; from another specimen.

„ 3″. Section of the inferior portion of the wall of the carapace overlying the branchial chamber.







1. HEMIPENÆUS SEMIDENTATUS.
2. 3. Dº TOMENTOSUS.

PLATE L.

PLATE L.

Hemipenæus tomentosus (p. 307).

Lateral view of female.

c. Second antenna with scaphocerite (under side); *phc*, phymacerite.

br. Branchial plume in section.

HEMIPENÆUS TOMENTOSUS.

PLATE LI.

PLATE LI.

Aristeus rostridentatus (p. 317).

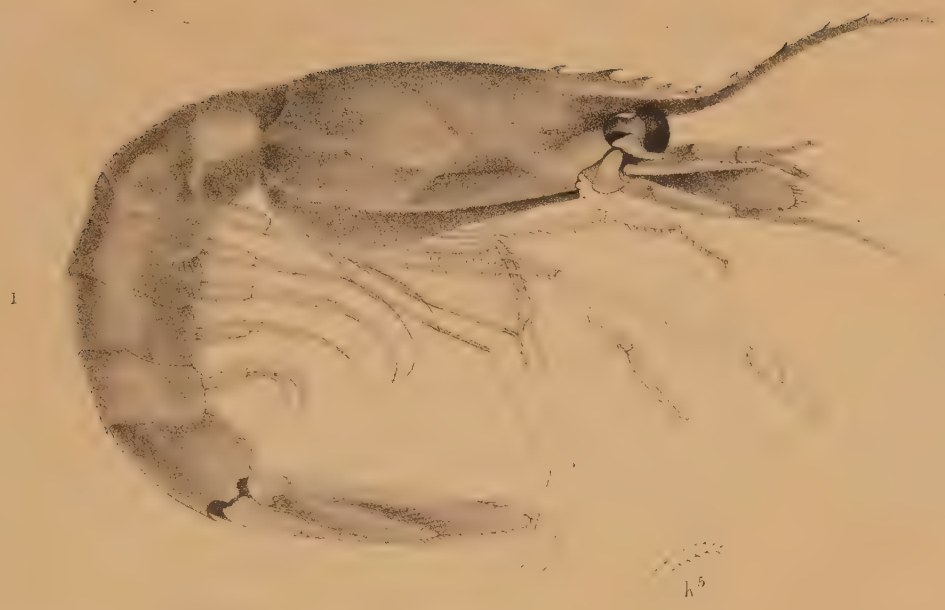
Fig. 1. Lateral view of female.

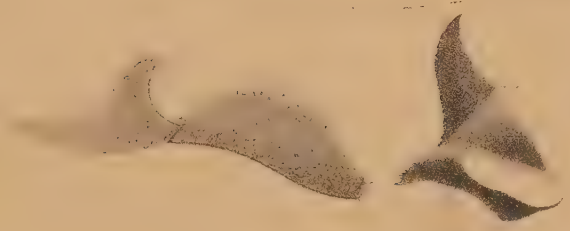
„ 1″. Ventral aspect; *p*, *p*, first pair of pleopoda.

d. Siagon or mandible.

br. Branchial plume in section.

k^5. Spine from the carpos of the first pair of pereiopoda.





ARISTEUS ROSTRIDENTATUS.

PLATE LII.

PLATE LII.

Hepomadus glacialis (p. 321).

Fig. 1. Lateral view of female.

„ 1″. Ventral aspect of pereion, showing the thelycum.

ea. Epistoma.

d. Siagon or mandible.

ma. Metastomata.

g. Third siagnopod or first maxillipede.

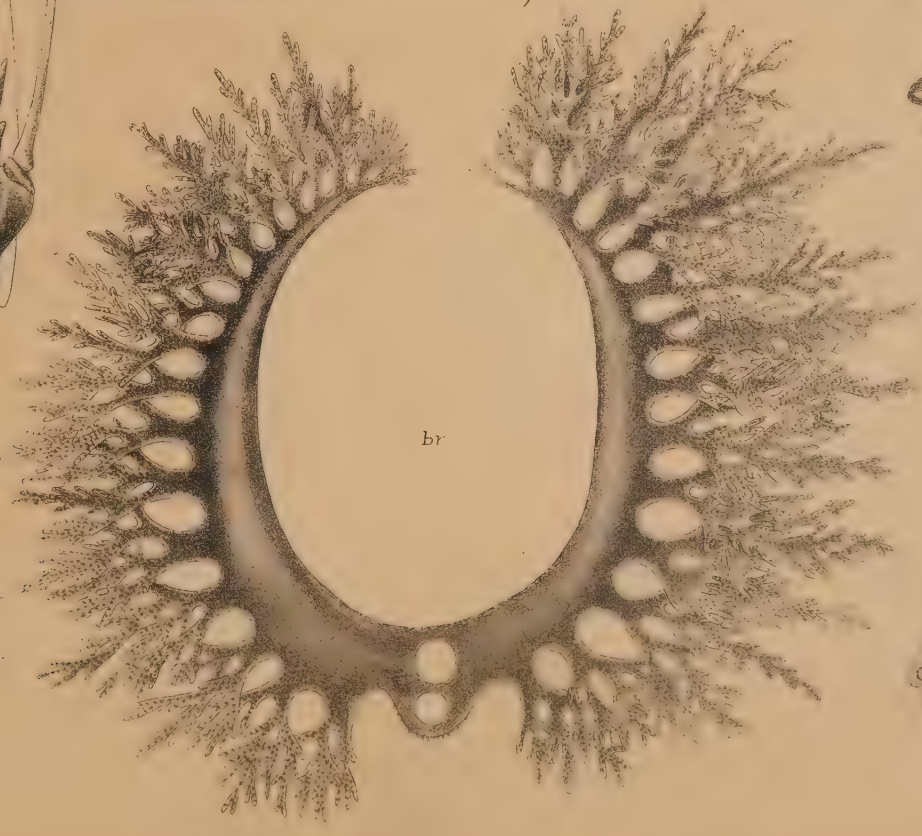
br. Branchial plume in section.

1

g

1''

d


br

md

ed

PLATE LIII.

PLATE LIII.

Peteinura gubernata (p. 324).

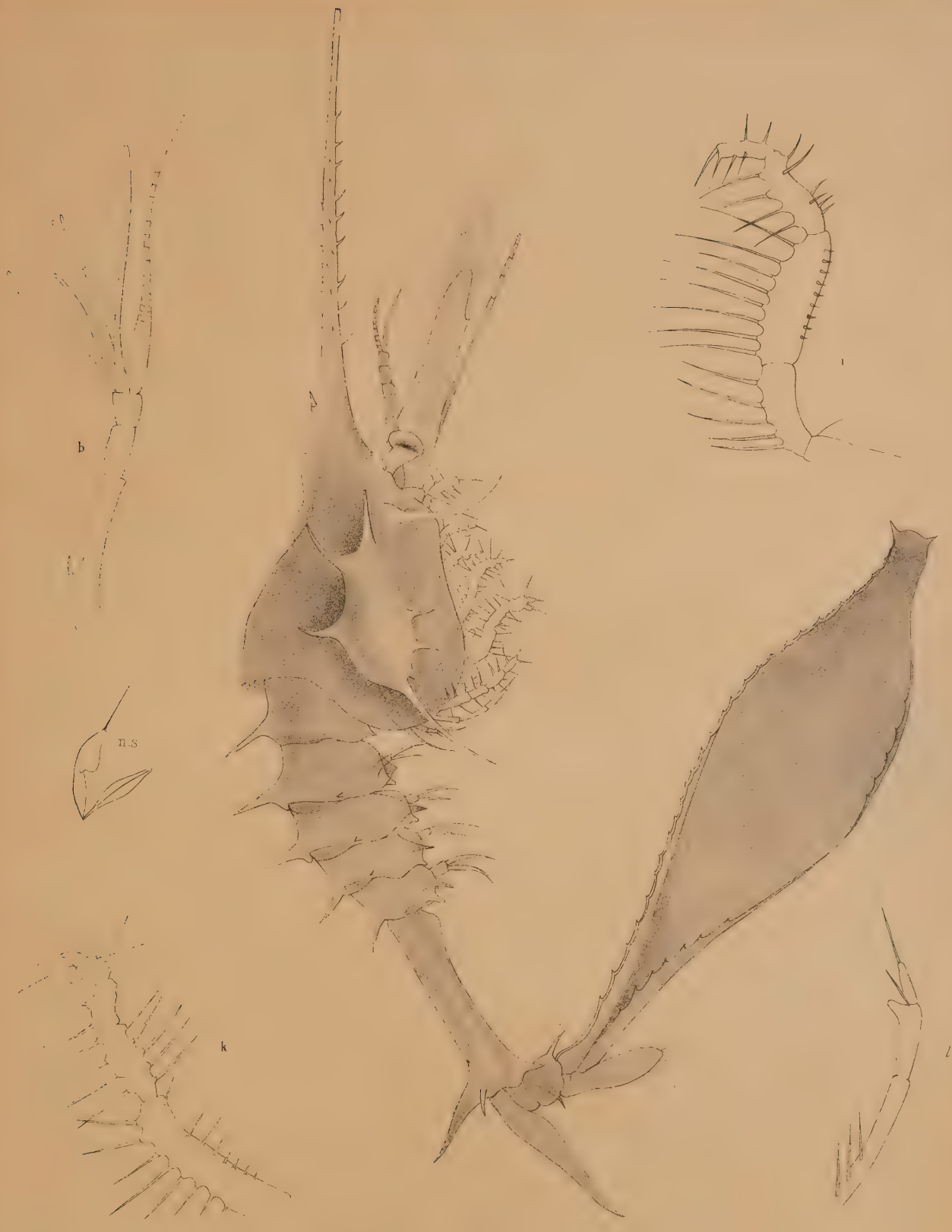
Lateral view; enlarged eight times.

b. First antenna.

i. Second gnathopod.

k. First pereiopod.

l. Second pereiopod.



C.S.B. ad. nat. W. Purkiss, lith.

Hanhart imp.

PETEINURA GUBERNATA.

PLATE LIV.

PLATE LIV.

Benthesicymus crenatus (p. 329).

Lateral view.

a. Ophthalmopod.

b. First antenna; upper surface.

b''. First antenna; under surface.

c. Second antenna.

c''. Second antenna; second joint of peduncle showing the ancecerite and base of the scaphocerite.

d. Siagon or mandible, with metastoma, *d''*, in position.

e. First siagnopod.

f. Second siagnopod.

g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod.

BENTHESICYMUS CRENATUS.

PLATE LV.

PLATE LV.

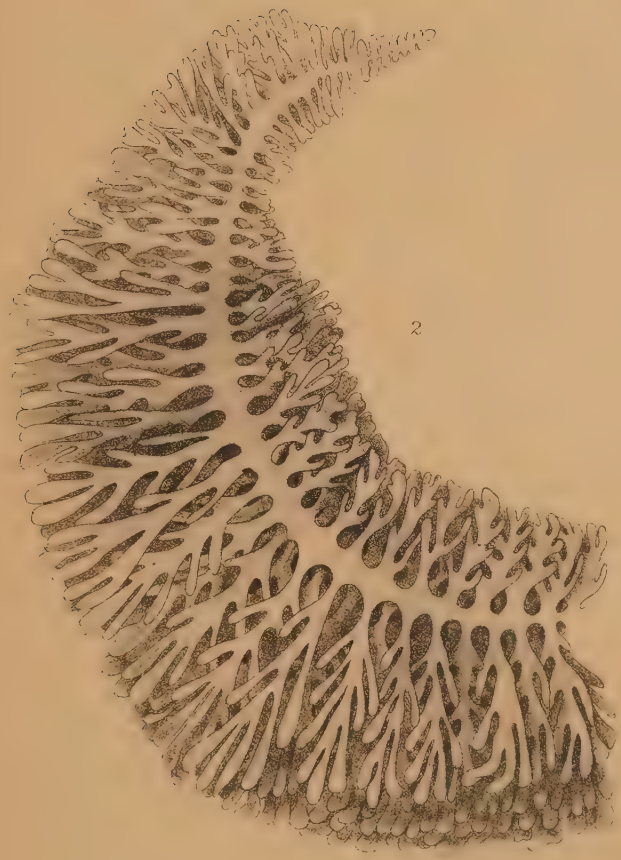
Benthesicymus crenatus (branchiæ) (p. 329).

Fig. 1. Pereion, with side of the carapace removed to show the arrangement and position of the branchiæ.

,, 2. Branchial plume.

,, 3. Branch of the same; attached to the central stalk.

1



2

3

J.G.Bell nat.W.Purkiss lith.

BENTHESICYMUS CRENATUS, (Branchiæ.)

Hanhart ...

PLATE LVI.

PLATE LVI.

Benthesicymus iridescens (p. 335).

Fig. 1. Outer branch of sixth pleopod; arterial vessels, red; venous, blue; nerve-filaments, yellow; muscles, brown.

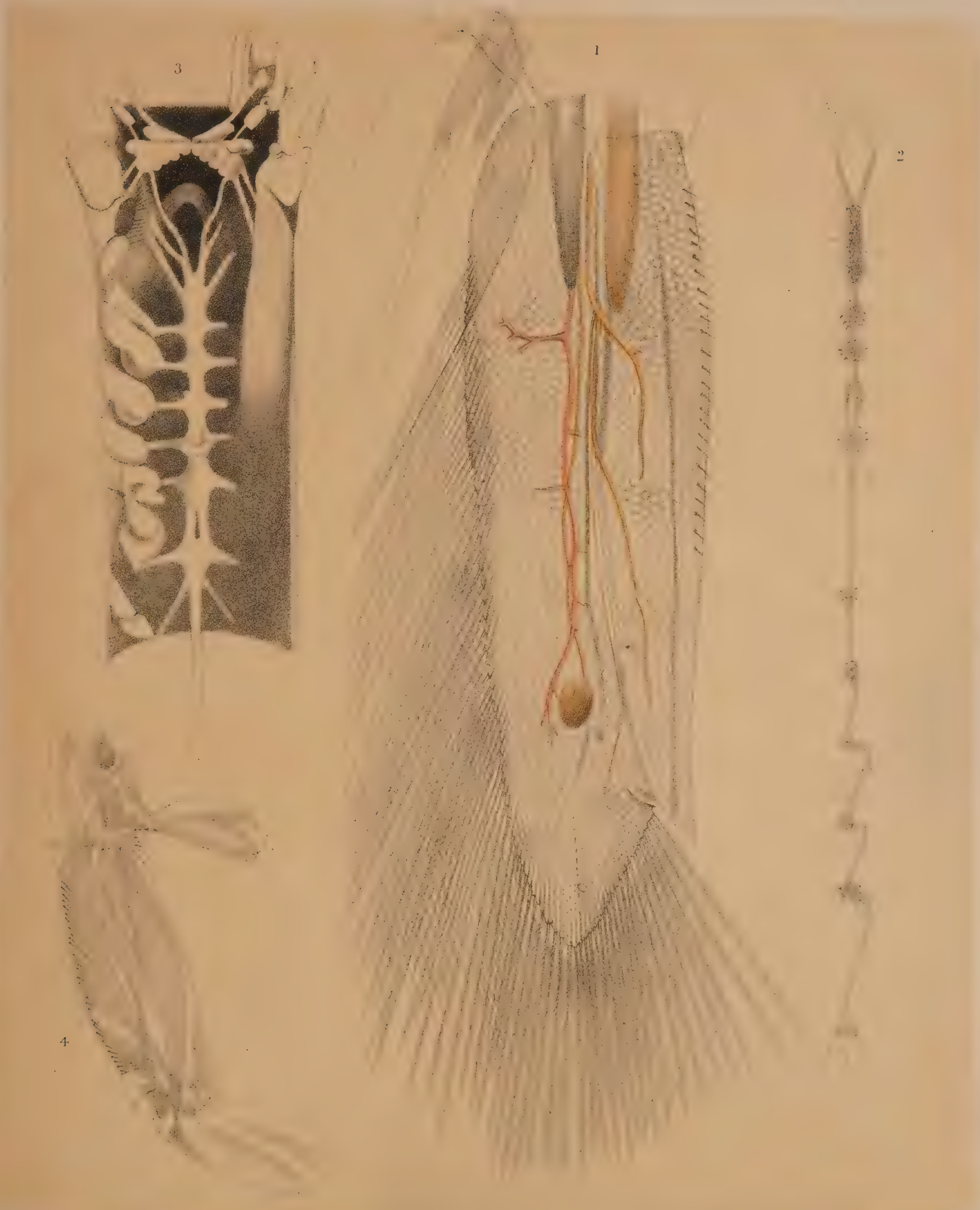
„ 2. Ventral nerve-cord of same.

Eucopia australis.

„ 3. Ventral nerve-cord.

Sergestes atlanticus.

„ 4. Arrangement of muscles in the sixth somite of the pleon.



C.S.B. ad nat. W. Purkiss lith

1. BENTHESICYMUS IRIDESCENS. 3. EUCOPIA AUSTRALIS.
2. Dº Dº 4. SERGESTES ATLANTICUS.

PLATE LVII.

PLATE LVII.

Benthesicymus brasiliensis (p. 332).

Fig. 1. Lateral view.

„ 1*br*. Section of a branchial plume.

Benthesicymus pleocanthus (p. 334).

„ 2. Lateral view.

„ 2*br*. Section of branchial plume.

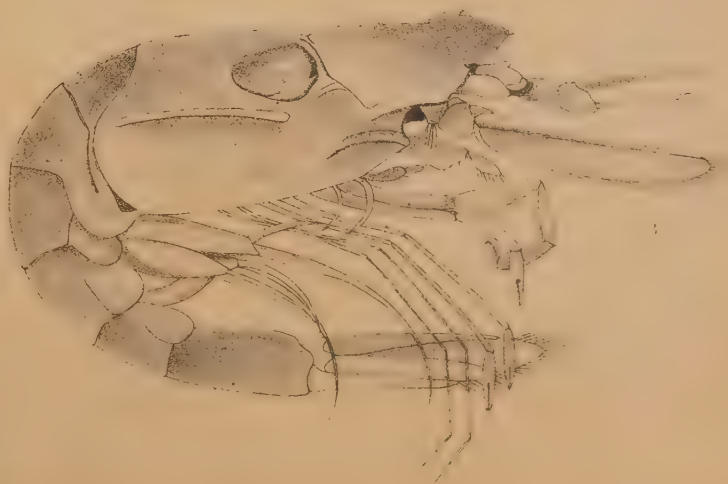
Benthesicymus iridescens (p. 335).

„ 3. Lateral view.

„ 3*a*. Ophthalmopod.

„ 3*a*″. Diagrammatic section of eye.

„ 3*br*. Branch of a branchial plume.



C.S.B. ad nat. W. Purkiss lith.

1. BENTHESICYMUS BRASILIENSIS.
2. Dº PLEOCANTHUS.
3 Dº IRIDESCENS.

PLATE LVIII.

PLATE LVIII.

Benthesicymus altus (p. 336).

Fig. 1. Lateral view.

„ 1*a*. Ophthalmopod.

„ 1z. Telson.

„ 1*br*. Section of branchial plume.

Benthesicymus mollis (p. 339).

„ 2. Lateral view.

„ 2z. Telson.

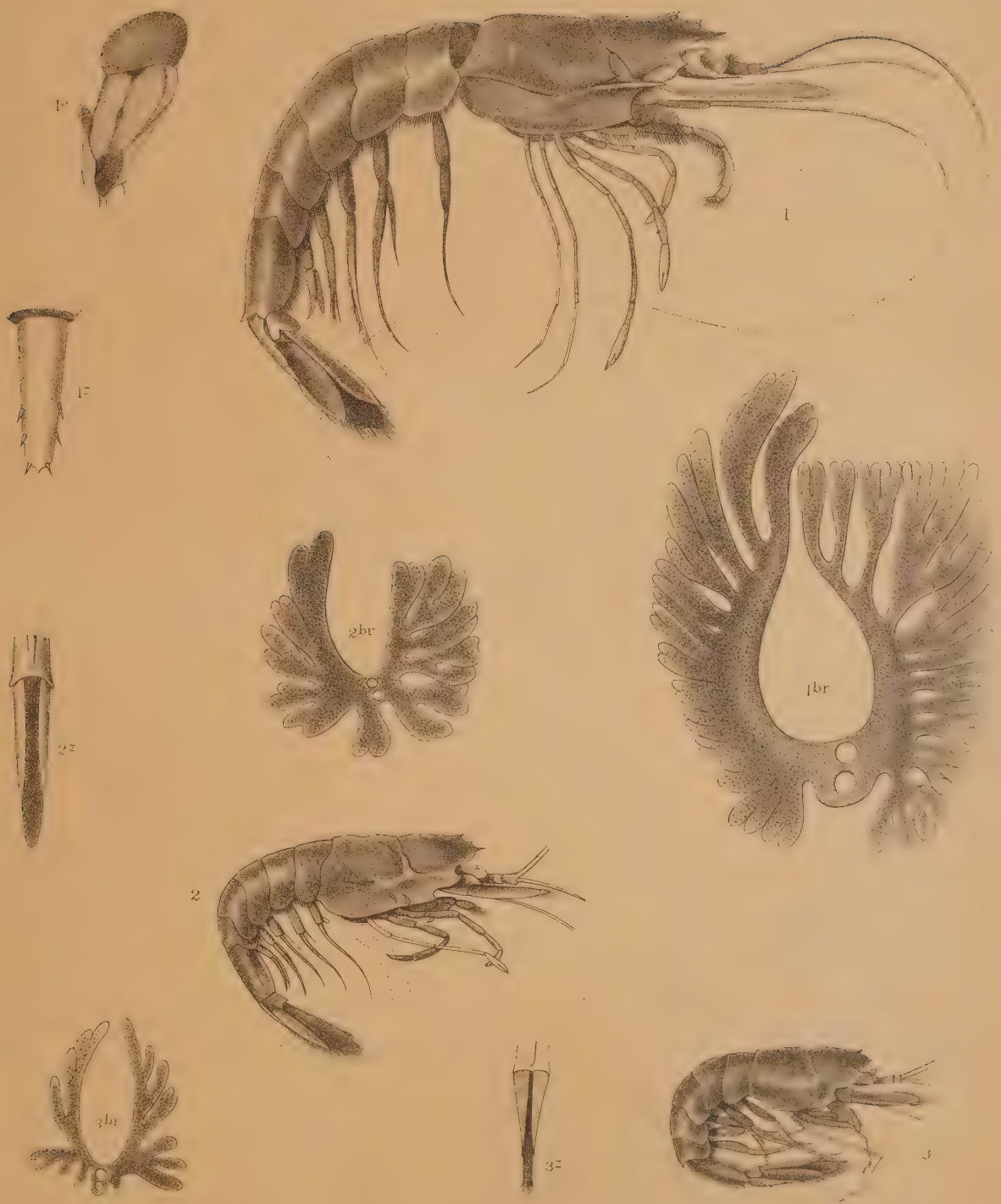
„ 2*br*. Section of branchial plume.

Gennadas intermedius (p. 343).

„ 3. Lateral aspect.

„ 3z. Telson.

„ 3*br*. Section of branchial plume.



C.S.B. ad nat. W. Purkiss, lith.

Hanhart imp.

1. BENTHESICYMUS ALTUS.
2. Dº MOLLIS.
3 GENNADAS INTERMEDIUS.

PLATE LIX.

PLATE LIX.

Gennadas parvus, male (p. 340).

Fig. 1. Lateral view.

„ 2. Another specimen containing a parasitic (?) worm.

i. Second gnathopod; with dactylos enlarged.

k. First pereiopod.

m. Third pereiopod; with chela enlarged.

p,p. Basisal joint of first pair of pleopoda showing the petasmata hooked together in the middle by small cincinnuli.

p''. Cincinnulus.

q. Appendages attached to the second pleopod.

zv. Telson and sixth pleopod.

br. Section of a branchial plume.

C.S.Bad.nat. W.Purkiss lith.

GENNADAS PARVUS.

Hanhart imp.

PLATE LX.

PLATE LX.

Petalidium foliaceum (p. 349).

Fig. 1. Lateral view; enlarged twice.

,, 2. Oral apparatus; *d,d,* distal joints of the synaphipod of the mandibles; *d′*, epistoma; *d″,d″*, metastoma; *e,e,* first pair of siagnopoda.

d. Siagon or mandible.

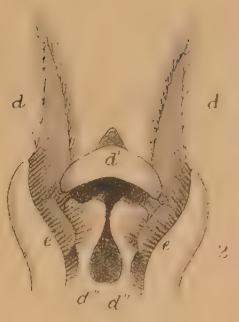
e. First siagnopod; detached.

f. Second siagnopod; detached.

g. Third siagnopod; detached.

,, 3. Branchiæ, shown in position.

,, 4. A foliaceous branchial plate.



C.S.B ad nat., W.Purkiss, lith.

PETALIDIUM FOLIACEUM.

Hanhart imp

PLATE LXI.

PLATE LXI.

Sergestes—Development.

Elaphocaris Zoea (p. 355).

Fig. 1. Dorsal view; enlarged thirty-two times.

„ 2z. Telson.

„ 3. Rostrum of another specimen.

Elaphocaris crassus (p. 362).

„ 4. Dorsal view; enlarged fifty times.

„ 4*b*. First antenna.

„ 4*c*. Second antenna.

C.S.B. ad nat. W. Purkiss, lith.
Hanhart, imp.

SERGESTES (Development)
1-3. Elaphocaris Zoea
4. Dº

PLATE LXII.

PLATE LXII.

Sergestes—Development.

Elaphocaris dohrni (pp. 357–360).

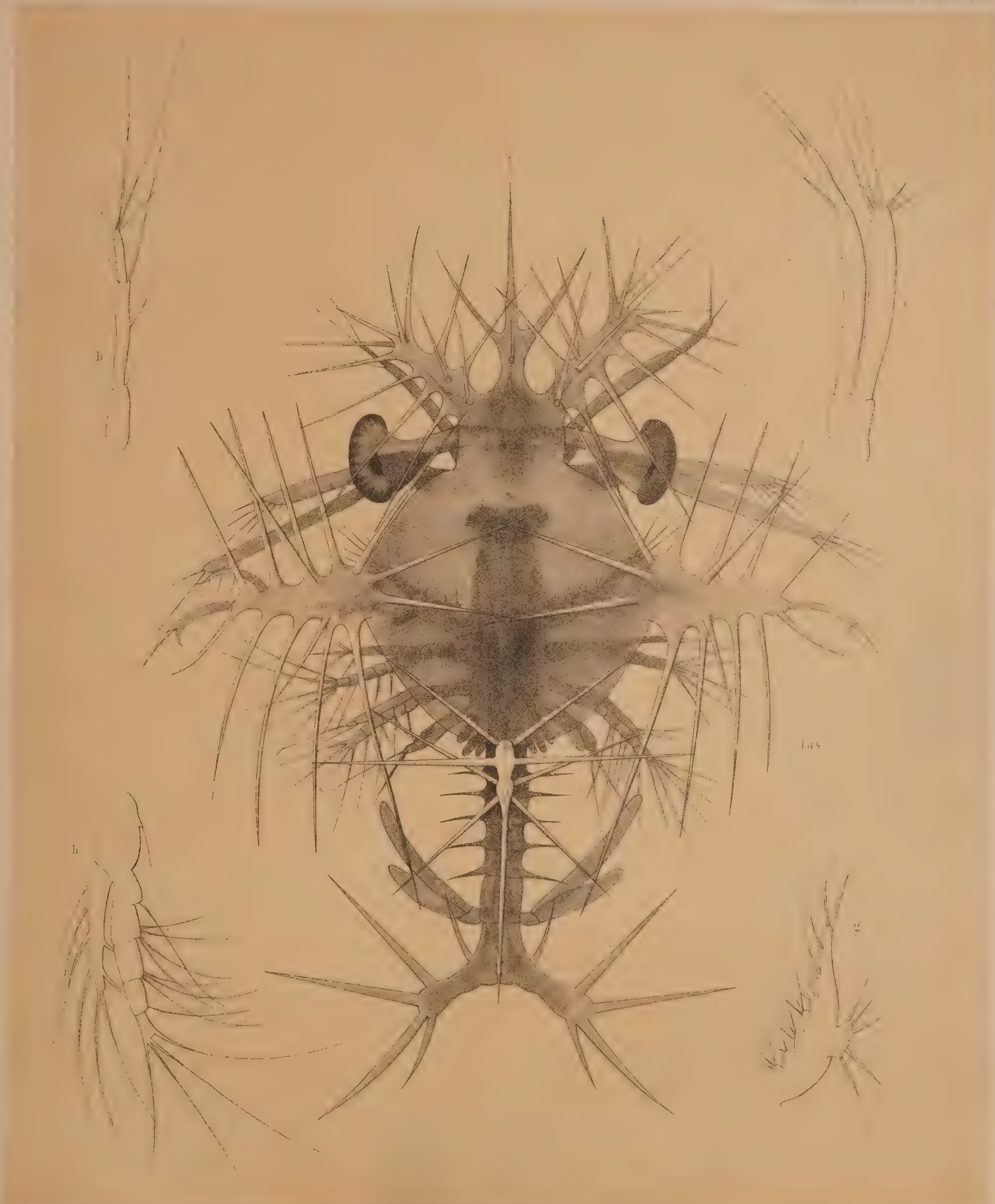
Dorsal view; enlarged fifty-three times.

b. First antenna.

c. Second antenna.

g. Third siagnopod or first maxillipede.

h. First gnathopod.



C S B ad nat. W Purkiss lith

SERGESTES (Development.)
Elaphocaris dohrni.

PLATE LXIII.

PLATE LXIII.

Sergestes (?)—Development.

Platysacus crenatus (p. 363).

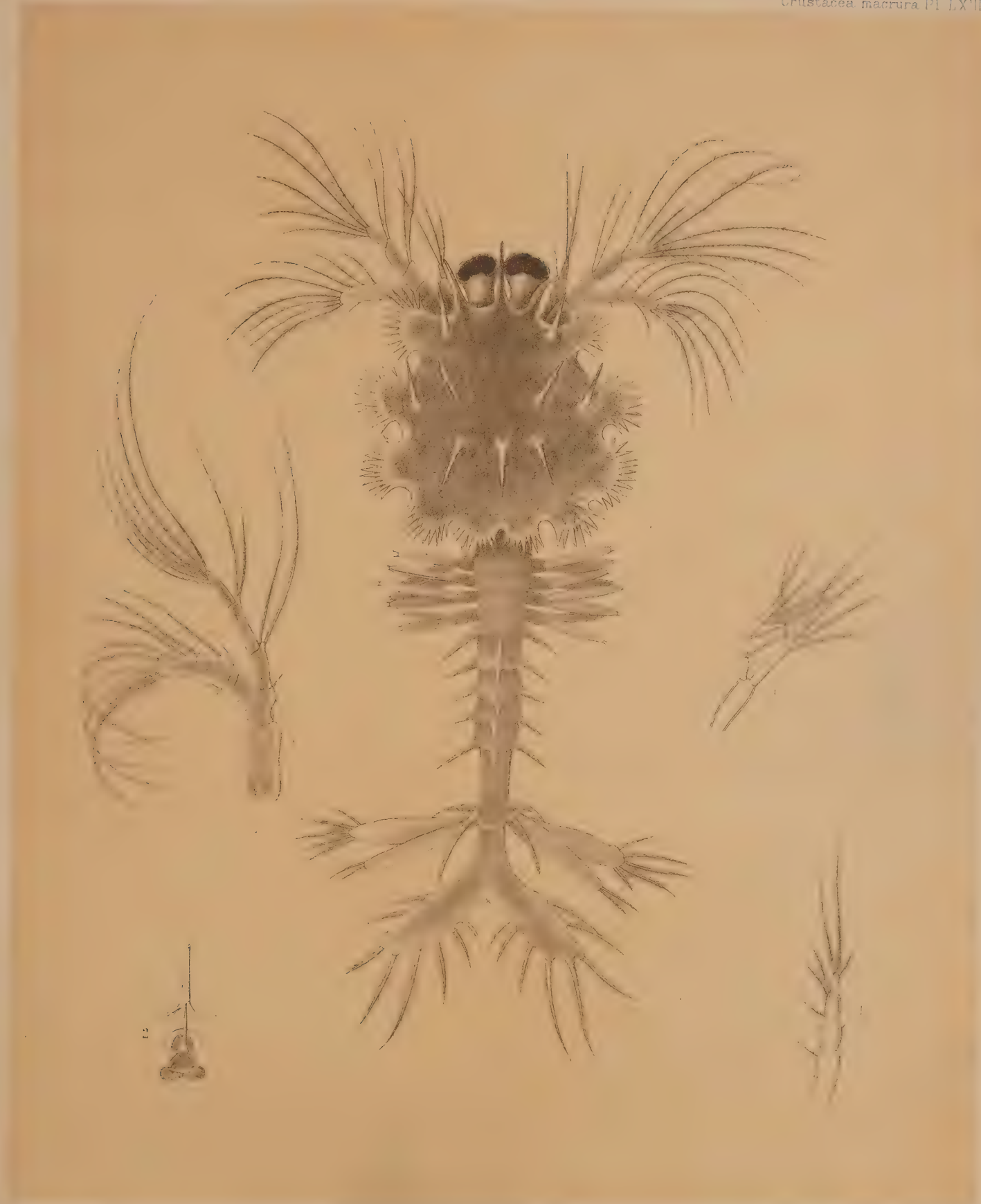
Fig. 1. Dorsal view; enlarged seventy times.

„ 2. Rostrum of carapace and of epistoma.

„ *b*. First antenna.

„ *c*. Second antenna.

„ *i*. Second gnathopod.



C.S.B. ad nat. W. Purkiss lith.

PLATYSACUS CRENATUS.
SERGESTES? (Development)

PLATE LXIV.

PLATE LXIV.

Sergestes—Development.

Acanthosoma brevitelsonis (p. 367).

Fig. 1. Dorsal view; enlarged thirty-five times.

Acanthosoma tynitelsonis (p. 369).

„ 2. Latero-dorsal view; enlarged twenty times.

Acanthosoma longitelsonis (p. 371).

„ 3. Latero-dorsal view; enlarged forty times.

C. S. B. ad nat. W. Purkess, lith.

Hanhart, imp.

SERGESTES, (Development.)

(Acanthosoma Stage.)

1. ACANTHOSOMA BREVITELSONIS.
2. Dº TYNITELSONIS.
3. Dº LONGITELSONIS.

PLATE LXV.

PLATE LXV.

Sergestes—Development.

Acanthosoma dorsispinalis (370).

Fig. 1. Lateral view; enlarged twenty-five times.

Acanthosoma lævirostratis[1] (p. 374).

„ 2. Lateral view; enlarged twenty-eight times.

Mastigopus dorsispinalis (p. 375).

„ 3. Lateral view; enlarged twenty times.

„ *i.k.l.* Branchiæ attached to the second gnathopod, and first and second pereiopoda.

Mastigopus tenuis (p. 428).

„ 4. Lateral view; enlarged twenty times.

„ 4*b*. Base of peduncle of first antenna, with otolith.

„ 4*c*. Second antenna.

„ 4*l*. Third pereiopod; extremity.

[1] *Habitat.*—North of Admiralty Islands, between Stations 221 and 222. Associated with *Acanthosoma dorsispinalis* and *Mastigopus dorsispinalis*. Length, 3 mm. (0·12 in.).

SERGESTES. (Development.)

1. Acanthosoma dorsispinalis. 3 Mastigopus dorsispinalis
2 Do Lævirostratus 4 Do

PLATE LXVI.

PLATE LXVI.

Sergestes—Development.

Acanthosoma macrotelsonis (p. 373).

Fig. 1. Dorsal view; enlarged forty times.

Mastigopus suhmi (p. 378).

„ 2. Dorsal view; enlarged twenty-five times.

1

2

C.S.B. ad nat. W. Purkiss, lith.

Hanhart imp.

SERGESTES (Development.)

1. Acanthosoma macrotelsoms.
2. Mastigopus Suhmi.

PLATE LXVII.

PLATE LXVII.

Sergestes semiarmis (p. 423).

Fig. 1. Lateral view; enlarged eight times.
,, 1*i*. Second gnathopod; distal extremity.
,, 1*l*. Second pereiopod; chela.
,, 1*m*. Third pereiopod; chela.

Sergestes semiarmis, var. (p. 424).

,, 2*c*. Second antenna; scaphocerite.
,, 2*k*. First pereiopod; distal extremity.
,, 2*l*. Second pereiopod; chela.
,, 2*n*, *o*. Fourth and fifth pereiopoda.
,, 2*z*. Telson.

Sergestes læviventralis (p. 425).

,, 3. Lateral view; enlarged thirteen times.
,, 3*l*. Second pereiopod; chela.
,, 3*n*, *o*. Fourth and fifth pereiopoda.

Mastigopus spiniventralis (p. 379).

,, 4. Lateral view; enlarged twelve times.
,, 4*z*. Telson.

Sergestes spiniventralis (p. 426).

,, 5*a*. Ophthalmopod and rostrum.
,, 5*l*. Second pereiopod; chela.
,, 5*v*. Sixth pleopod; outer branch.

Sergestes spiniventralis,[1] var.

,, 6*a*. Ophthalmopod; *b*, first antenna; *c*, second antenna.
,, 6*n*, *o*. Fourth and fifth pereiopoda.

[1] *Habitat.*—West Pacific.

1. SERGESTES SEMIARMIS.
2. Dº Dº
3. Dº LÆVIVENTRALIS.
4. MASTIGOPUS SPINIVENTRALIS
5. SERGESTES Dº
6. Dº Dº

PLATE LXVIII.

PLATE LXVIII.

Sergestes atlanticus, male (p. 389).

Lateral view; enlarged twice.

b ♂. First antenna of male.

b ♀. First antenna of female; flagella.

c. Second antenna; scaphocerite and terminal joints of peduncle.

d. Mandible.

e. First siagnopod.

f. Second siagnopod

g. Third siagnopod.

C.S.B. ad. nat. W. Purkiss lith.

SERGESTES ATLANTICUS.

Hanhart imp.

PLATE LXIX.

PLATE LXIX.

Sergestes atlanticus (p. 393).

p,p. First pair of pleopoda of male, with petasmata united in the median line.

q ♂. Second pleopod; appendages attached to the base of the flagella.

q♀. Second pleopod; appendage attached to the base of the flagella.

v. Sixth pleopod.

z. Telson.

SERGESTES ATLANTICUS.

PLATE LXX.

PLATE LXX.

Sergestes japonicus (p. 387).

Fig. 1. Lateral view; enlarged twice.

„ 1*a*, *a*. Ophthalmopoda, and *b*, *b*, first pair of antennæ; *c*, *c*, scaphocerites in position, dorsal view.

„ 1*b*. First antenna.

„ 1*h*. Second gnathopod.

„ 2. Branchiæ; seen in natural position.

Sergestes kröyeri (p. 388).

„ 3. Lateral view; enlarged twice.

„ 3*a*. Ophthalmopod in position, with first antenna.

„ 4. Branchiæ; in natural position.

1, 2. SERGESTES JAPONICUS.
3, 4. Dº KRÖYERI.

PLATE LXXI.

PLATE LXXI.

Sergestes prehensilis (p. 385).

Fig. 1. Lateral view; enlarged twice.

a. Ophthalmopod

b. First antenna.

d. Mandible or siagon.

e. First siagnopod.

f. Second siagnopod.

g. Third siagnopod.

k. First pereiopod; showing the prehensile character of the ultimate articulation.

P. Pereion detached, with gnathopoda *h*, *i*, and pereiopoda *k*, *l*, *m*, *n*, *o*, connected, the larger branchial plumes removed to show the position of their attachment to the somite and the rudimentary form of the pleurobranchia.

SERGESTES PREHENSILIS.

PLATE LXXII.

PLATE LXXII.

Sergestes dorsispinalis (p. 394).

Fig. 1. Lateral view; enlarged fifteen times.

,, 1*c*. Second antenna; otolith.

Sergestes nasidentatus (p. 398).

,, 2. Lateral aspect; enlarged twelve times.

,, 2*k*. First pereiopod; ultimate articulation.

,, 2*l*. Second pereiopod; chela.

Sergestes diapontius (p. 399).

,, 3. Lateral view; enlarged six times.

,, 3*i*. Second gnathopod; ultimate joints.

,, 3*k*. First pereiopod; ultimate articulation.

,, 3*l*. Second pereiopod; chela.

C.S.B. ad nat. W Purkiss lith.

Hanhart imp

1. SERGESTES DORSISPINALIS.
2. Dº NASIDENTATUS.
3. Dº DIAPONTIUS.

PLATE LXXIII.

PLATE LXXIII.

Sergestes armatus (p. 401).

Fig. 1. Lateral aspect; enlarged nine times.

„ 1*b*. First antenna.

„ 1z. Telson.

Sergestes edwardsii (p. 403).

„ 2. Lateral view; enlarged twelve times

„ 2*c*. Second antenna; scaphocerite.

„ 2*k*. First pereiopod.

„ 2*br*. Branchial plume.

„ 2*br''*. Branch of branchial plume.

Sergestes rinkii (p. 404).

„ 3. Lateral view; enlarged twelve times.

„ 3z. Telson.

C.S.B. ad nat. W. Purkiss, lith.

Haubart imp.

1 SERGESTES ARMATUS.
2 Do. EDWARDSII.
3 Do. RINKII.

PLATE LXXIV.

PLATE LXXIV.

Sergestes oculatus (p. 406).

Fig. 1. Lateral view; enlarged twenty times.

„ 1*b*. First antenna.

„ 1*c*. Second antenna; scaphocerite.

„ 1*c*″. Extremity of scaphocerite.

Sergestes ovatoculus (p. 408).

„ 2. Lateral view; enlarged ten times.

„ 2*z*. Telson; extremity.

Sergestes parvidens(p. 409).

„ 3. Lateral aspect; enlarged fifteen times.

„ 3*b*. First antenna; flagella.

„ 3*c*. Second antenna; extremity of scaphocerite.

„ 3*k*. First pereiopod; ultimate articulation.

C.S.B. ad nat. W. Purkiss lith.

Hanhart imp.

1. SERGESTES OCULATUS.
2. Dº OVATOCULUS.
3. Dº PARVIDENS.

PLATE LXXV.

PLATE LXXV.

Sergestes corniculum (p. 410).

Fig. 1. Lateral view; enlarged nine times.

„ 1z. Telson.

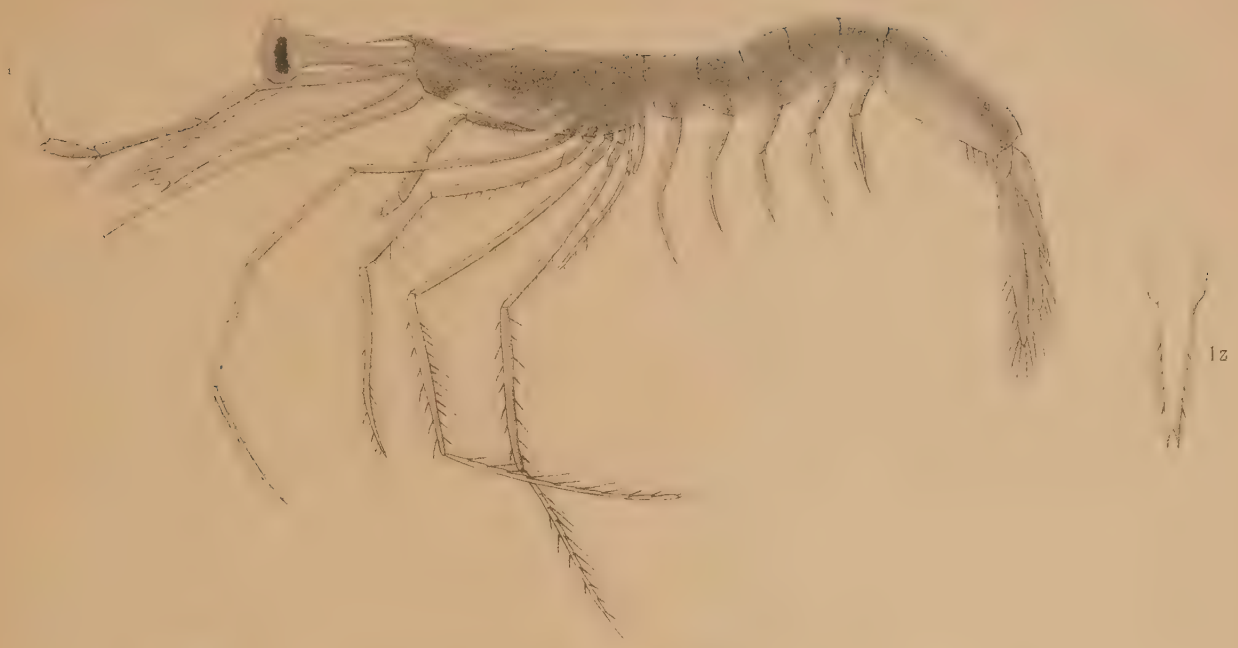
Sergestes ancylops (p. 413).

„ 2. Lateral view; enlarged thirty times.

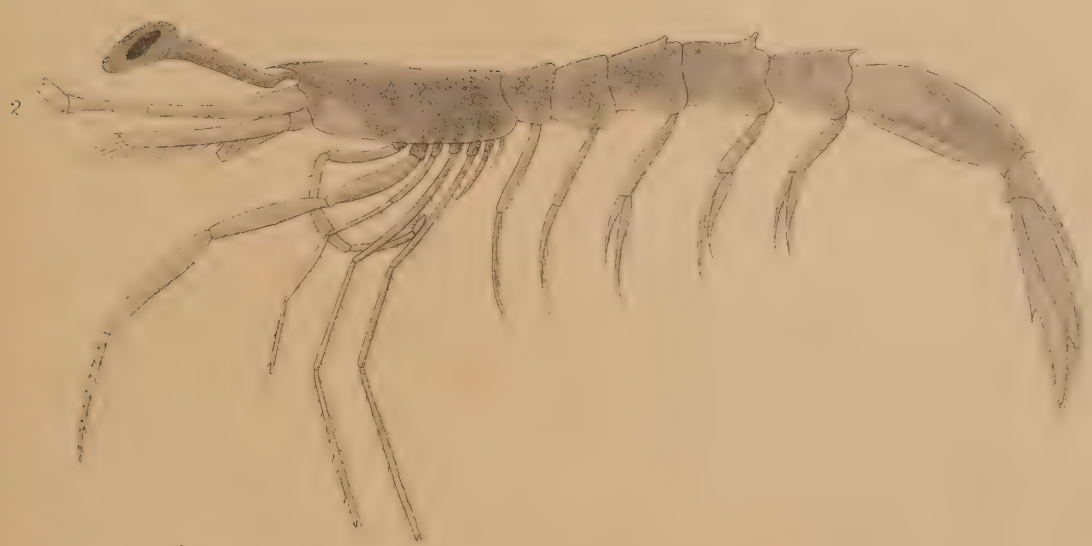
Sergestes longirostris (p. 415).

„ 3. Lateral view; enlarged fifteen times.

„ 3z. Telson.



1z



2

3

3z

C.S.B. ad nat., W. Purkiss, lith.

Hanhart imp.

1 SERGESTES CORNICULUM.
2 Do. ANCYLOPS.
3 Do. LONGIROSTRIS.

PLATE LXXVI.

PLATE LXXVI.

Sergestes junceus (p. 416).

Fig. 1. Lateral view; enlarged twenty times.

Sergestes longispinus (p. 417).

„ 2. Lateral view; enlarged sixteen times.

„ 2*b*. First antenna; outer flagellum.

„ 2*c*. Second antenna; extremity of scaphocerite.

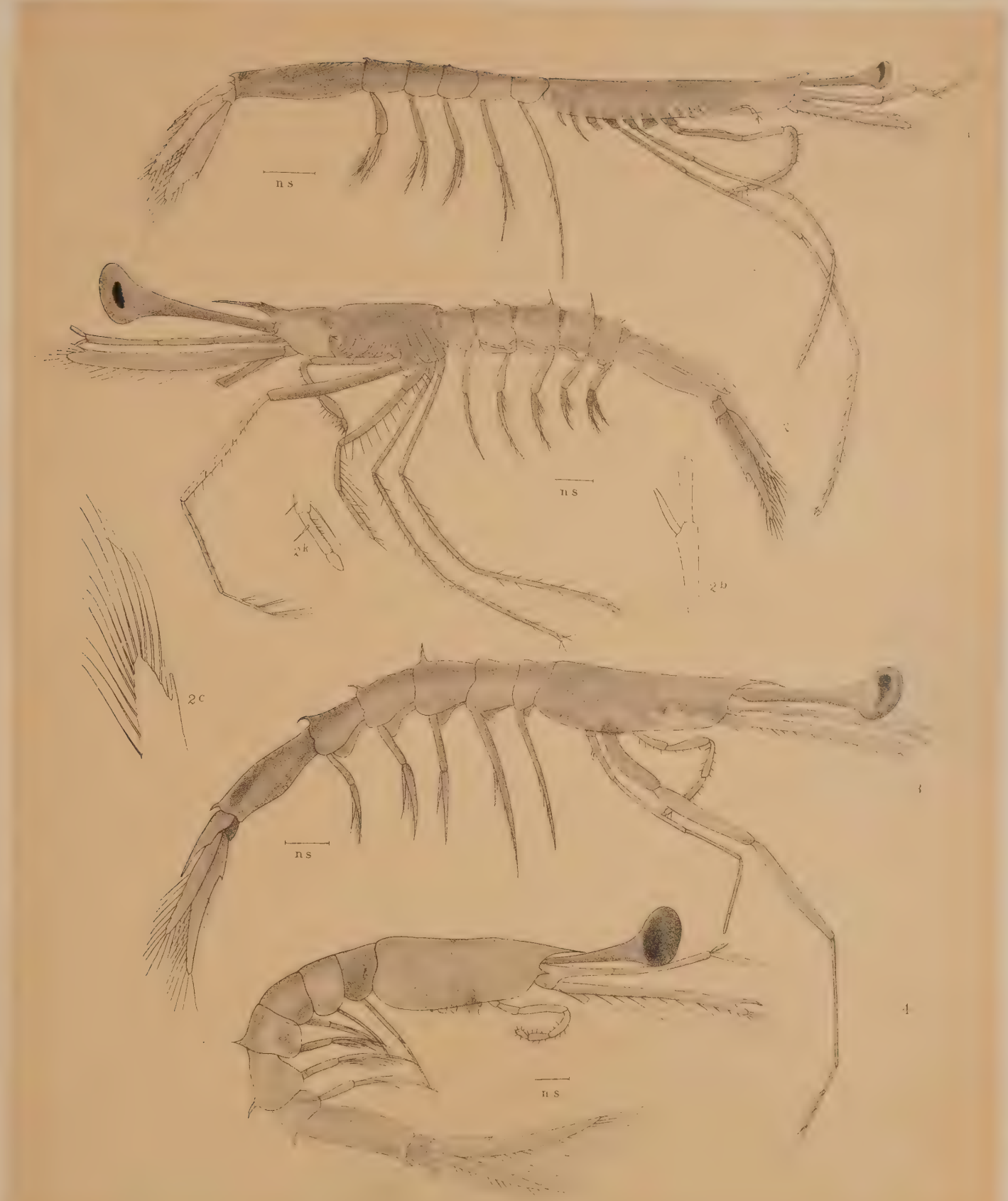
„ 2*k*. First pereiopod; distal joints.

Sergestes penerinkii (p. 418).

„ 3. Enlarged sixteen times.

Sergestes fermerinkii (p. 419).

„ 4. Enlarged twenty-three times.



C.S.B. ad nat. W. Purkiss, lith.

Hanhart imp.

1. SERGESTES JUNCEUS.
2. Dº LONGISPINUS.
3. Dº PENERINKII.
4. Dº FERMERINKII.

PLATE LXXVII.

PLATE LXXVII.

Sergestes longicollus (p. 421).

Fig. 1. Lateral view; enlarged ten times.

Sergestes præcollus (p. 423).

„ 2. Lateral aspect; enlarged ten times.

„ 2*m*. Third pereiopod; chela.

. . B. ad.nat. W. Purkiss, lith.

Hanhart imp

1. SERGESTES LONGICOLLUS .
2. Dº PRÆCOLLUS .

PLATE LXXVIII.

PLATE LXXVIII.

Sciacaris telsonis (p. 438).

Fig. 1. Ventro-lateral aspect; enlarged twenty times.

„ 1*m*. Third pereiopod; chela.

„ 1*p*. First pleopod; appendage at base of flagellum.

„ 1z. Telson; dorsal view.

„ 2. Mastigopus stage of same; enlarged eighteen times (p. 439).

„ 2*c*. Second antenna; extremity of scaphocerite.

„ 2z. Telson; dorsal view.

„ 3. Acanthosoma stage of same; enlarged twenty-one times (p. 441).

„ 3z. Telson; side view.

D.S.B ad nat. W Purkiss, lith

Hanhart imp

1. SCIACARIS TELSONIS.
2. Mastigopus Stage.
3. Acanthosoma Stage.

PLATE LXXIX.

PLATE LXXIX.

Development and Structure of *Lucifer* (p. 452).

Fig. 1. Zoea of *Lucifer*; enlarged sixty times.

b. First antenna.

c. Second antenna; *c''*, scaphocerite and one hair magnified.

e. First siagnopod or first maxilla.

f. Second siagnopod or second maxilla.

g. Third siagnopod or maxillipede.

h. First gnathopod.

i. Second gnathopod.

k. First pereiopod.

l. Second pereiopod.

m. Third pereiopod; m'', chela of same.

C.S. Bedwell et W. Parkins lith.

1. LUCIFER (Development)
2. Dº Structure.

PLATE LXXX.

PLATE LXXX.

Lucifer—Structure of male.

Fig. 1. Lateral view, showing vas deferens on left side, containing ripe spermatophore.

,, 2. Lateral view, showing vas deferens on right side.

ptm. Petasma.

c. Cephalon, anterior portion; showing the convolution of the green gland.

d. Mandible.

m. Third pereiopod; chela.

q. Second pleopod.

LUCIFER

PLATE LXXXI.

PLATE LXXXI.

Organs of generation of *Lucifer* (p. 444).

Fig. 1 ♀. Female, showing ovaries with spermatophore inserted into the oviduct; also neural cord and muscular arrangement.

„ 2 ♀. Female with ovum approaching extrusion, with spermatophore inserted.

„ 3 ♂. Male, showing spermatophore ready for expulsion. Testes in outline.

„ 4 ♂. Male, showing testes in position, with spermatophore in outline. Another in the process of formation.

C.S. Bradnat. W. Parkiss lith.

LUCIFER, (Structure)

Hanhart imp.

PLATE LXXXII.

PLATE LXXXII.

Lucifer—Development of male (p. 463).

Figs. 1–4. Males of different ages.

C.S.B. ad nat. W. Purkiss lith.

Hanhart imp.

LUCIFER, (Development) mas.

PLATE LXXXIII.

PLATE LXXXIII.

Lucifer typus.

Fig. 1. Lateral view of male (p. 464). Enlarged twenty-two times.

„ 2. Lateral view of female (p. 466). Enlarged twenty-two times.

„ 3. Cephalon, showing ophthalmopod and antennæ; the second pair with the long scaphocerite and styliform phymacerite.

m. Terminal extremity or minute chela of the third pair of pereiopoda.

C.S.R. ad nat. W. Purkiss. 2th

Hanhart imp.

LUCIFER TYPUS.

PLATE LXXXIV.

PLATE LXXXIV.

Lucifer reynaudii.

Fig. 1. Lateral view of male (p. 466). Enlarged twenty-two times.

,, 2. Lateral view of female (p. 467). Enlarged twenty-two times.

,, 3. Cephalon, showing the cerebral ganglion and the neural branch leading to the second pair of antennæ.

,, 4. Cephalon, showing the cerebral ganglion and neural cord, also the green gland and its long winding duct connecting it with the second pair of antennæ.

,, 5. Male, posterior portion of the sixth somite of the pleon, sixth pair of pleopoda and telson, showing the arrangement of the muscles and position of the sixth pleonic gland.

m. Chela of the third pair of pereiopoda.

C.S.B. ad nat. W. Purkiss, lith.

LUCIFER REYNAUDII.

Hanhart imp.

PLATE LXXXV.

PLATE LXXXV.

Acetes indicus (p. 442).

Fig. 1. Lateral view; enlarged twice.

Lucifer (young) (p. 457).

„ 2. Lateral view.

Zoontocaris galatheæ (p. 474).

„ 3. Dorsal view; enlarged thirty times.

Zoontocaris approximus (p. 475).

„ 4. Dorsal view; enlarged twenty-four times.

Sestertius duplicidentes (p. 477).

„ 5. Lateral view; enlarged eighteen times.

„ 5*c*. Second antenna.

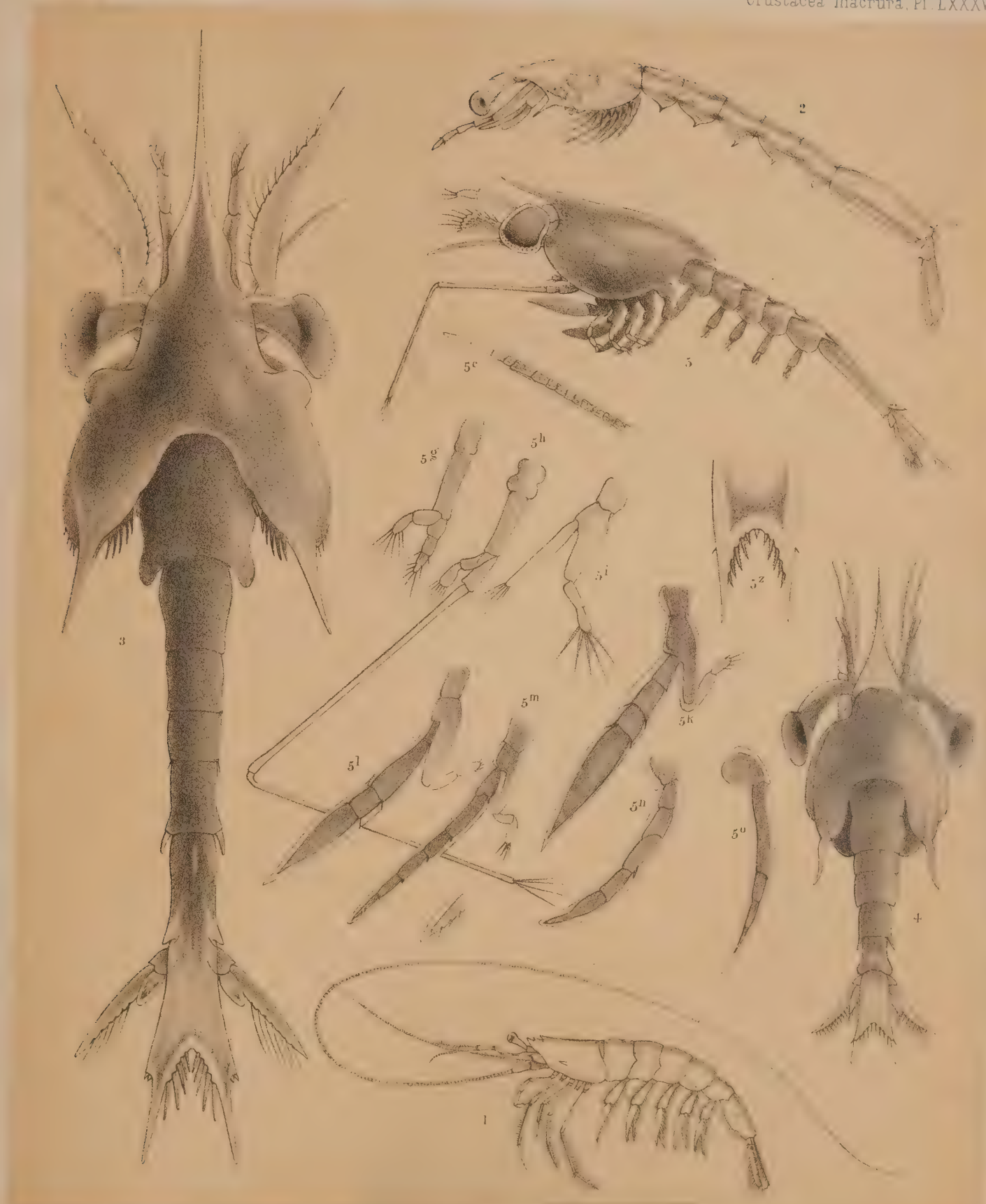
„ 5*g*. Third siagnopod.

„ 5*h*. First gnathopod.

„ 5*i*. Second gnathopod.

„ 5*k*–5*o*. Pereiopoda.

„ 5*z*. Telson.



Hanhart imp

1. ACETES INDICUS. 3. ZOONTOCARIS GALATHEÆ.
2. LUCIFER, (Young) 4. Dº APPROXIMUS.
5. SESTERTIUS DUPLICIDENTES.

PLATE LXXXVI.

PLATE LXXXVI.

Crangon affinis (p. 484).

Fig. 1. Carapace, dorsal view; enlarged twice.

„ 1*b*. First antenna.

„ 1*d*. Mandible; *e*, first siagnopod; *f*, second siagnopod; shown in their natural position.

„ 2. Branchiæ, in natural position.

„ 3. Rhipidura.

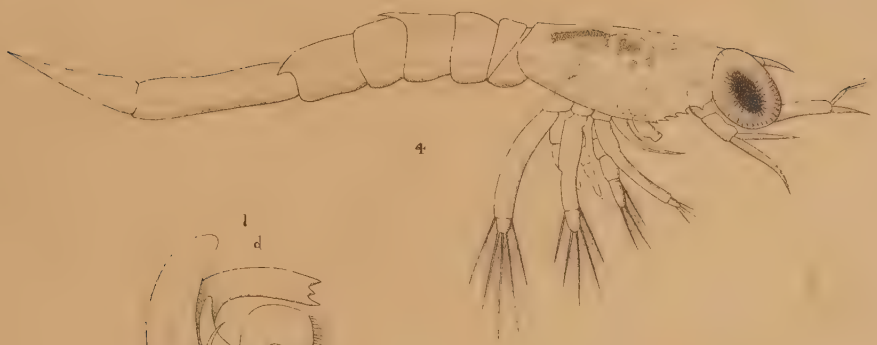
Crangon vulgaris (p. 483).

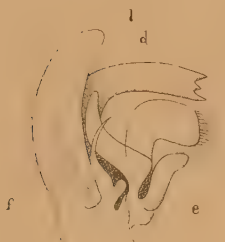
„ 4. Brephalos, lateral view.

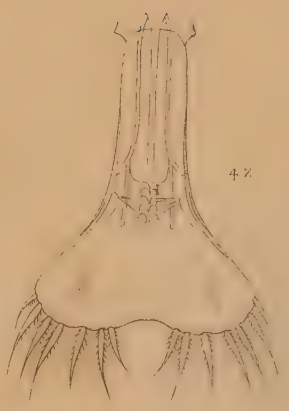
„ 4z. Telson of same.

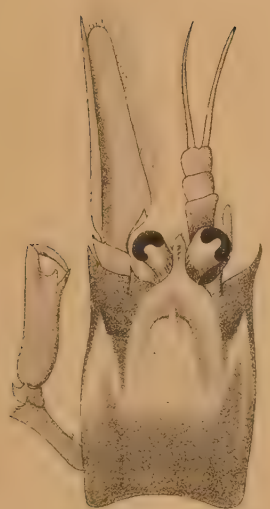
Pontocaris propensalata (p. 496).

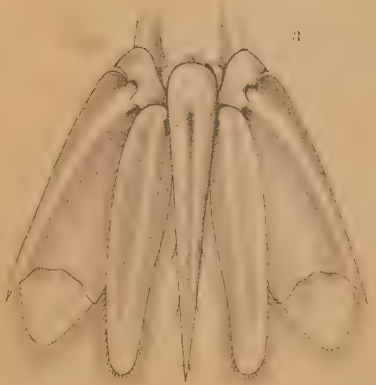
„ 5. Branchiæ, in natural position.











1. CRANGON AFFINIS.
2. Dº Dº BRANCHIÆ.
3. CRANGON AFFINIS (RHIPIDURA.)
4. Dº VULGARIS BREPHALOS.)
5. PONTOCARIS PROPENSALATA (BRANCHIÆ.)

PLATE LXXXVII.

PLATE LXXXVII.

Pontophilus gracilis (p. 487).

Fig. 1. Ventral aspect; enlarged four times.

„ 2. Dorsal view; enlarged four times.

„ 3. Branchiæ, in natural position; *br*, section of plume.

p ♂. First pleopod of male.

p ♀. First pleopod of female.

q ♂. Second pleopod of male.

q ♀. Second pleopod of female.

C.S.B. ad nat. J.C. Mennors

Hanhart imp.

1 PONTOPHILUS GRACILIS (DORSAL.)
2. Dº Dº (VENTRAL.)
3. Dº Dº (BRANCHIÆ.)

PLATE LXXXVIII.

PLATE LXXXVIII.

Pontophilus profundus (p. 490).

Fig. 1. Lateral view; enlarged four times.

„ 1*a*. Section of the ophthalmus, showing the form of the ocular facets.

„ 1*i*. Second gnathopod.

„ 1*k*. First pereiopod; chela.

„ 1*l*. Second pereiopod; chela.

„ 1*p* ♂. First pleopod of male.

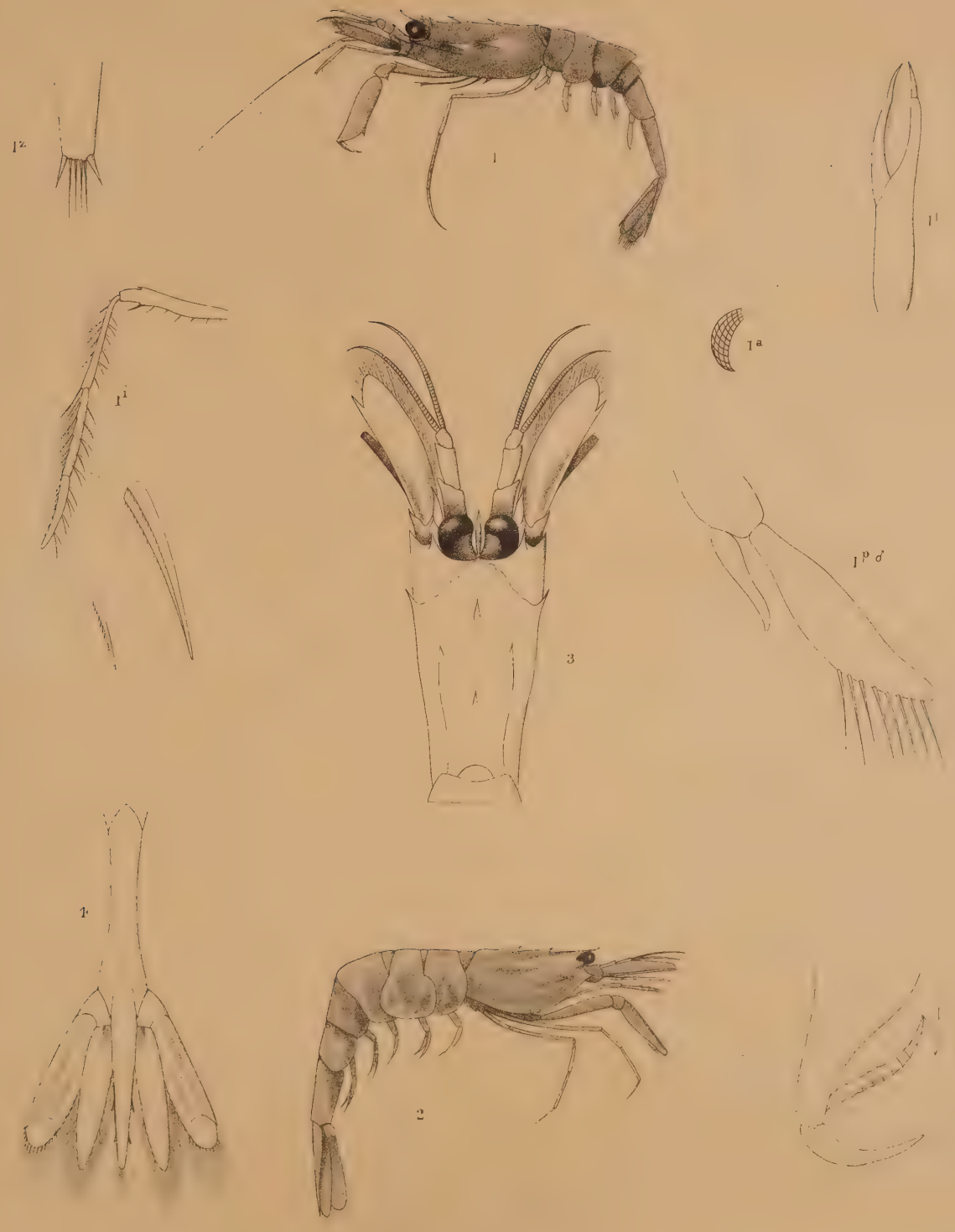
„ 1z. Telson.

Pontophilus junceus (p. 491).

„ 2. Lateral view; enlarged twice.

„ 3. Dorsal view of carapace.

„ 4. Rhipidura.



1. PONTOPHILUS PROFUNDUS. 3. PONTOPHILUS JUNCEUS (CEPHALON.
2. Dº JUNCEUS. 4. Dº Dº RHIPIDURA.

PLATE LXXXIX.

PLATE LXXXIX.

Crangon vulgaris (p. 483).

Fig. 1. Structure of the pereionic viscera of the brephalos; *a*, ophthalmus; *b*, first joint of first antenna; *c*, first joint of second antenna; *d*, mandible; *e*, first siagnopod; *f*, second siagnopod; *g*, third siagnopod; *h*, first gnathopod; *i*, second gnathopod; *k*, *l*, *m*, *n*, buds of four successive pereiopoda; *gc*, stomach, the outer double line showing its area when dilated, the inner or convoluted double line showing its contour in rhythmical contraction; *cd*, heart.

„ 1*a*″. Lenses of the ophthalmus, showing the numerical increase during development.

Sabinea septemcarinata (p. 493).

„ 2. Dorsal view; enlarged twice.

Parathanas decorticus (p. 530).

„ 3. Lateral view; enlarged twelve times.

„ 3*c*. Second antenna; scaphocerite as seen within its exuvium.

„ 3*k*–3*n*. First four pairs of pereiopoda within their exuvium.

„ 3*v*. Fifth pleopod; portion of outer branch within its exuvium.

„ 3*v*″. Fifth pleopod; one of the hairs enlarged.

Alpheus (Brephalos) (p. 538).

„ 4. Lateral view. From a specimen of *Alpheus* hatched by Dr. Power.

„ 4*b*. First antenna.

„ 4*c*. Second antenna.

„ 4*z*. Telson.

Latreutes planus (p. 584).

„ 5. Lateral view; enlarged twelve times.

Latreutes unidentatus (p. 586).

„ 6. Lateral view; enlarged twelve times.

C.S.B. ad nat. J.C.Richards lith.

Hanhart imp.

1. CRANGON, (Structure.)
2. SABINEA SEPTEMCARINATA.
3. PARATHANAS DECORTICUS.
4. ALPHEUS (Brephalos.)
5. LATREUTES PLANUS.
6. Dº UNIDENTATUS.

PLATE XC.

PLATE XC.

Sabinea septemcarinata (p. 493).

Fig. 1. Ventral surface of pereion.

„ 1*a*. Ophthalmopoda; *b*, first pair of antennæ.

„ 1*l*. Second pereiopod.

„ 1*p* ♂. First pleopod of male.

„ 1*p* ♀. First pleopod of female.

„ 1z. Telson; *v*, sixth pleopod.

Pontocaris propensalata (p. 496).

„ 2. Dorsal view; enlarged twice.

„ 2*b*. First antenna.

„ 2*c*. Second antenna; part of flagellum enlarged.

„ 2*i*. Second gnathopod.

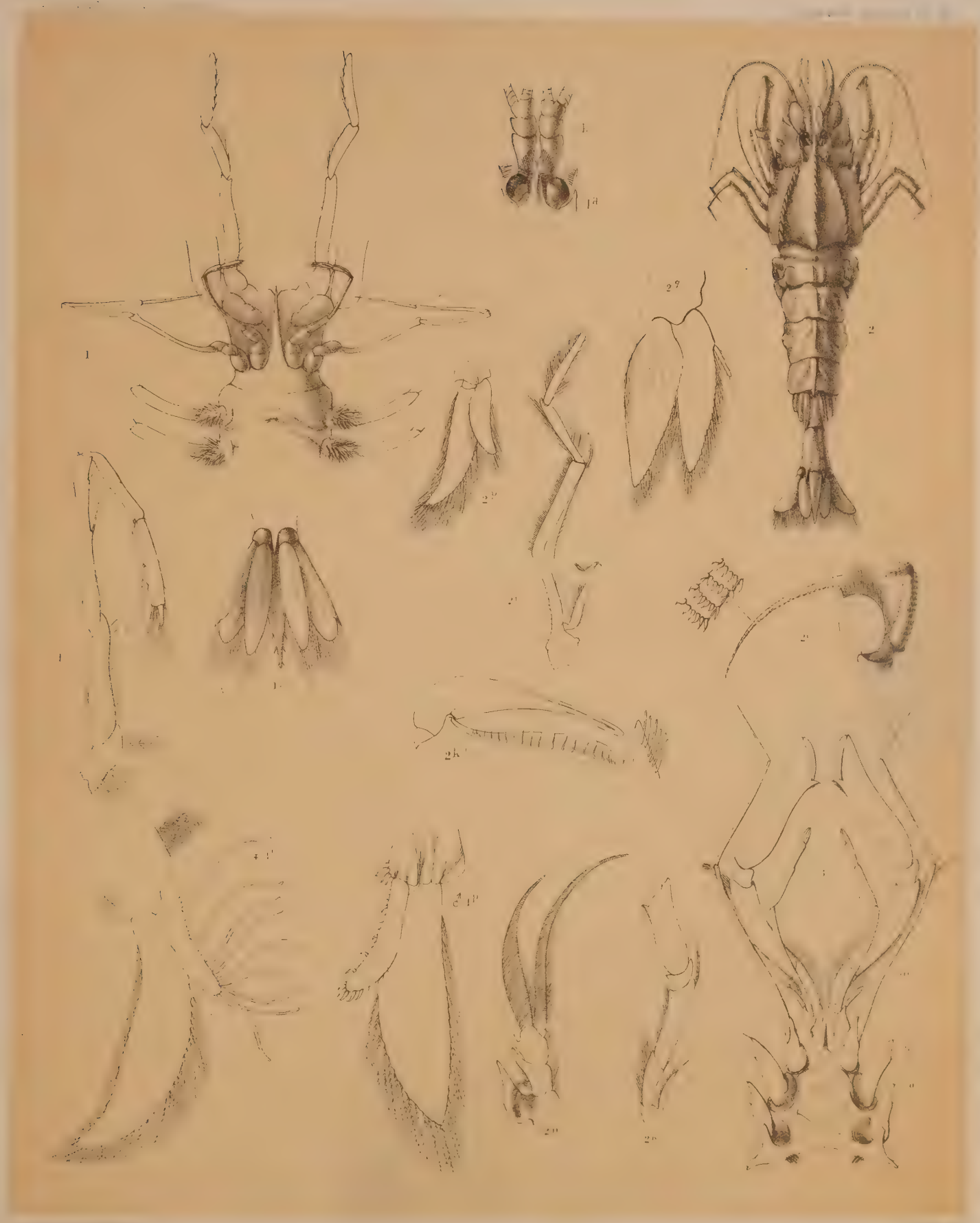
„ 2*k*. First pereiopod.

„ 2*k''*. First pereiopod; chela, enlarged.

„ 2*p*. First pleopod.

„ 2*q*. Second pleopod.

„ 3. Ventral surface of pereion; *k*, *l*, *m*, *n*, *o*, first to fifth pairs of pereiopoda.



1. SABINEA SEPTEMCARINATA. 2. 3. PONTOCARIS PROPENSALATA.

PLATE XCI.

PLATE XCI.

Pontocaris pennata (p. 499).

Fig. 1. Dorsal view; enlarged twice.

„ 2. Ventral aspect; enlarged four times.

d. Mandible; *d'*, upper surface of molar process; *d''*, lower surface of molar process.

g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod.

k. First pereiopod; *k''*, anterior margin of the palm.

l. Second pereiopod.

m. Third pereiopod.

p. First pleopod.

q. Second pleopod.

1 PONTOCARIS PENNATA
2. Dº Dº

PLATE XCII.

PLATE XCII.

Glyphocrangon granulosis (p. 507).

Fig. 1. Dorsal aspect.

„ 2. Lateral view.

„ 3. Oral apparatus.

b ♂. First antenna of male.

b ♀. First antenna of female; *b*″♀, first joint of same showing the acoustic aperture.

c ♀. Second antenna of female.

d. Mandible.

e. First siagnopod.

f. Second siagnopod.

g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod.

k. First pereiopod.

l. Second pereiopod.

p ♂. First pleopod of male; *p*″, margin of inner ramus.

p ♀. First pleopod of female.

q ♂. Second pleopod of male.

q ♀. Second pleopod of female.

„ 4. Brephalos (p. 506).

C.S.B. del. et lith. J.Hawkins Mth.

1. GLYPHOCRANGON GRANULOSIS (DORSAL)
2. " " (LATERAL)
3. " " (ORAL)
4. " " (BREPHALOS.)

PLATE XCIII.

PLATE XCIII.

Glyphocrangon granulosis (p. 507).

Fig. 1. Branchiæ, in natural position (p. 506).

„ 1*br*. Section of branchial plume.

Glyphocrangon podager (p. 516).

„ 2. Dorso-lateral view.

„ 2*m*. Third pereiopod; dactylos.

„ 2*o*. Fifth pereiopod; dactylos.

Glyphocrangon regalis (p. 517).

„ 3. Dorso-lateral view.

„ 3*m*. Third pereiopod; dactylos.

„ 3*o*. Fifth pereiopod; dactylos.

„ 4. Dorso-lateral view of a smooth variety.

„ 4*m*. Third pereiopod; dactylos.

„ 4*o*. Fifth pereiopod; dactylos.

Glyphocrangon hastacauda (p. 519).

„ 5. Dorso-lateral view.

„ 5*m*. Third pereiopod; dactylos.

„ 5*o*. Fifth pereiopod; dactylos.

C.S.B. ad nat. J.Hawkins, lith

1. GLYPHOCRANGON GRANULOSIS (BRANCHIÆ.)
2. Dº PODAGER.
3. GLYPHOCRANGON REGALIS.
4. Dº Dº. (SMOOTH VAR.)
5. GLYPHOCRANGON HASTACAUDA.

PLATE XCIV.

PLATE XCIV.

Glyphocrangon aculeata (p. 521).

Fig. 1. Dorsal view.

„ 1*m*. Third pereiopod; dactylos.

„ 1*o*. Fifth pereiopod; dactylos.

„ 1*gc*. Gastric spines; *gc'*, one of the spines isolated.

Glyphocrangon acuminata (p. 522).

„ 2 ♂. Lateral view of male.

„ 2*m*. Third pereiopod; dactylos.

„ 2*o*. Fifth pereiopod; dactylos.

„ 3 ♀. Lateral view of female.

„ 3*m*. Third pereiopod; dactylos.

„ 3*o*. Fifth pereiopod; dactylos.

„ 3*p* ♂. First pleopod of male.

„ 3*p* ♀. First pleopod of female; ova attached.

Glyphocrangon rimapes (p. 523).

„ 4. Dorso-lateral view.

„ 4*m*. Third pereiopod; dactylos.

„ 4*o*. Fifth pereiopod; dactylos.

C.S.B. ad nat. J. Hawkins lith.

1. CLYPHOCRANGON ACULEATA.
2. 3. Dº ACUMINATA.
4. Dº RIMAPES.

PLATE XCV.

PLATE XCV.

Nika processa (p. 527).

Fig. 1. Lateral view; enlarged three and a half times.

b. First antenna.

c. Second antenna, scaphocerite.

d. Mandible.

e. First siagnopod.

f. Second siagnopod.

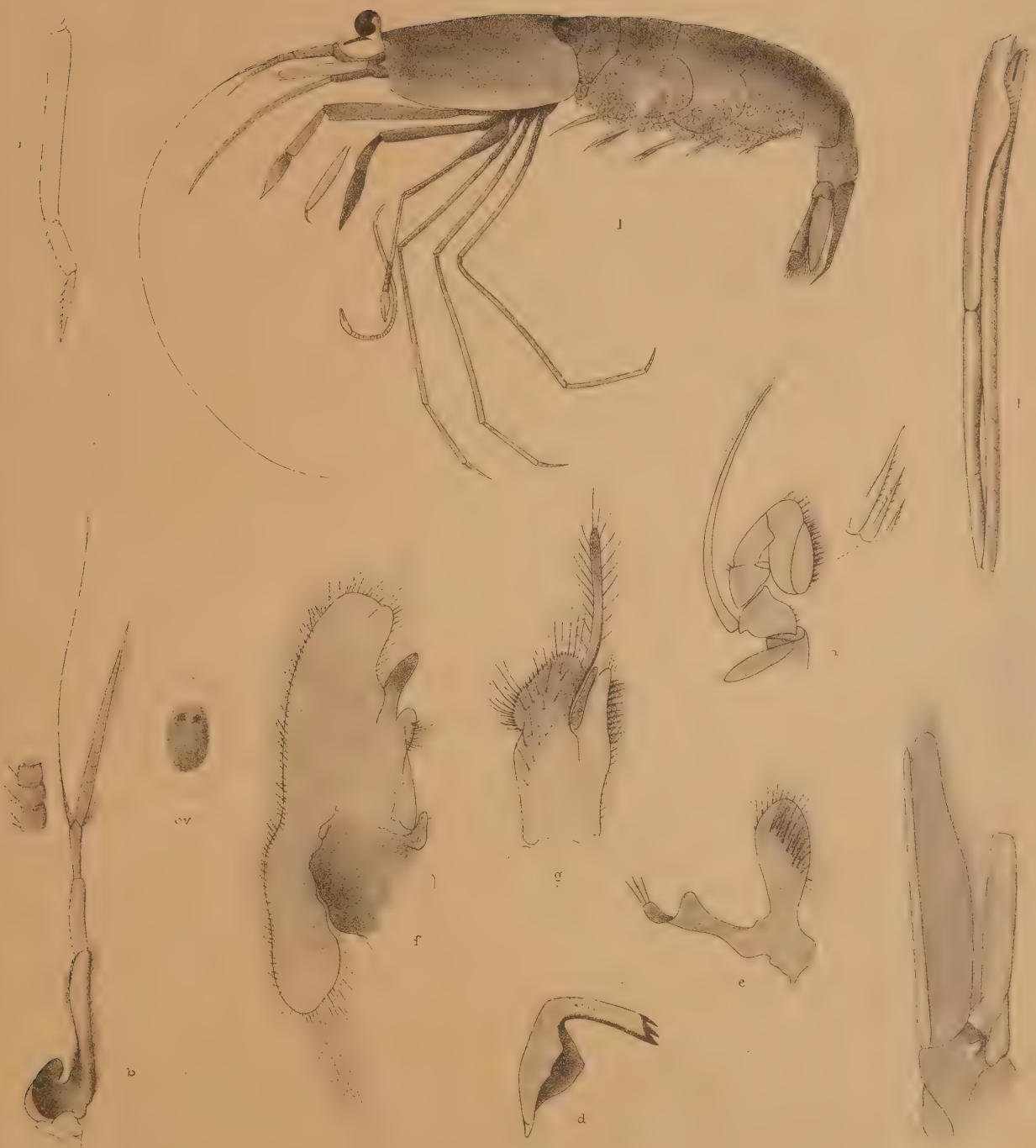
g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod.

l. Second pereiopod of right side.

ov. Ovum.



NIKA PROCESSA.

PLATE XCVI.

PLATE XCVI.

Athanas veloculus (p. 529).

Fig. 1. Lateral view; enlarged fifteen times.

Cheirothrix parvimanus (p. 533).

„ 2. Lateral view; enlarged six times.

„ 2*a*, *a*. Ophthalmopoda.

„ 2*b*. First antenna.

„ 2*c*. Second antenna.

„ 2*h*. First gnathopod.

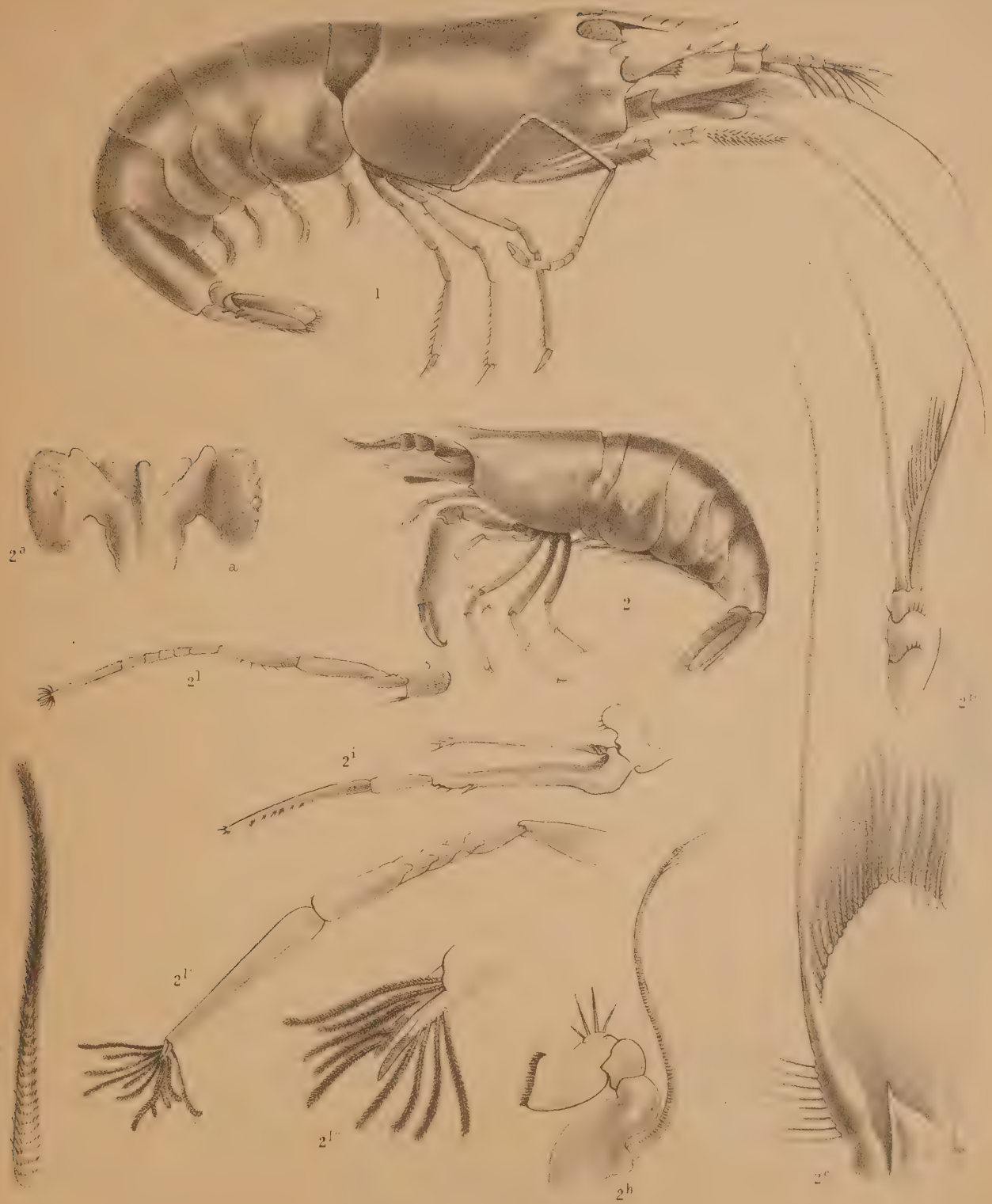
„ 2*i*. Second gnathopod.

„ 2*l*. Second pereiopod.

„ 2*l*′. Second pereiopod; enlarged.

„ 2*l*″. Second pereiopod; chela, more enlarged.

„ 2*l*‴. Second pereiopod; one hair, magnified.



C.S.B. ad nat. W. Purkiss lith.

Lanhart imp.

1. ATHANAS VELOCULUS.
2. CHEIROTHRIX PARVIMANUS

PLATE XCVII.

PLATE XCVII.

Alpheus edwardsii (p. 542).

Fig. 1. Lateral view; enlarged three times.

„ 1*d*. Mandible.

„ 1*h*. First gnathopod.

„ 1*i*. Second gnathopod.

„ 1*k*. First pereiopod; larger chela.

„ 1*m*. Third pereiopod; terminal joints.

„ 1*mb*. Mastigobranchia.

Alpheus acuto-femoratus (p. 545).

„ 2. Lateral view; enlarged three times.

„ 2*k*. First pereiopod; larger chela.

Alpheus cristidigitus (p. 546).

„ 3. Lateral view; enlarged four times.

„ 3*k*. First pereiopod; smaller chela.

Alpheus megacheles (p. 547).

„ 4. First pereiopod; larger chela.

C.S.B. ad nat. J.C. Richards lith.

Hanhart imp.

1. ALPHEUS EDWARDSII 2. ALPHEUS ACUTO-FEMORATUS.
3. ALPHEUS CRISTIDIGITUS.
4. " MEGACHELES

PLATE XCVIII.

PLATE XCVIII.

Alpheus leviusculus, var. (p. 549).

Fig. 1. Lateral view; enlarged three times.

„ 1c. Cephalon; *b*, first antenna; *c*, second antenna.

„ 1*k*. First pereiopod; left side.

„ 1*k*′. First pereiopod; left side, pollex.

„ 1*m*. Third pereiopod; terminal joints.

„ 1z. Telson.

Alpheus crinitus (p. 548).

„ 2. Lateral view; enlarged four times.

„ 2c. Cephalon with first and second antennæ; left side.

Alpheus bermudensis (p. 547).

„ 3. Lateral view; enlarged three times.

„ 3*k*. First pereiopod; larger chela.

Alpheus longimanus (p. 551).

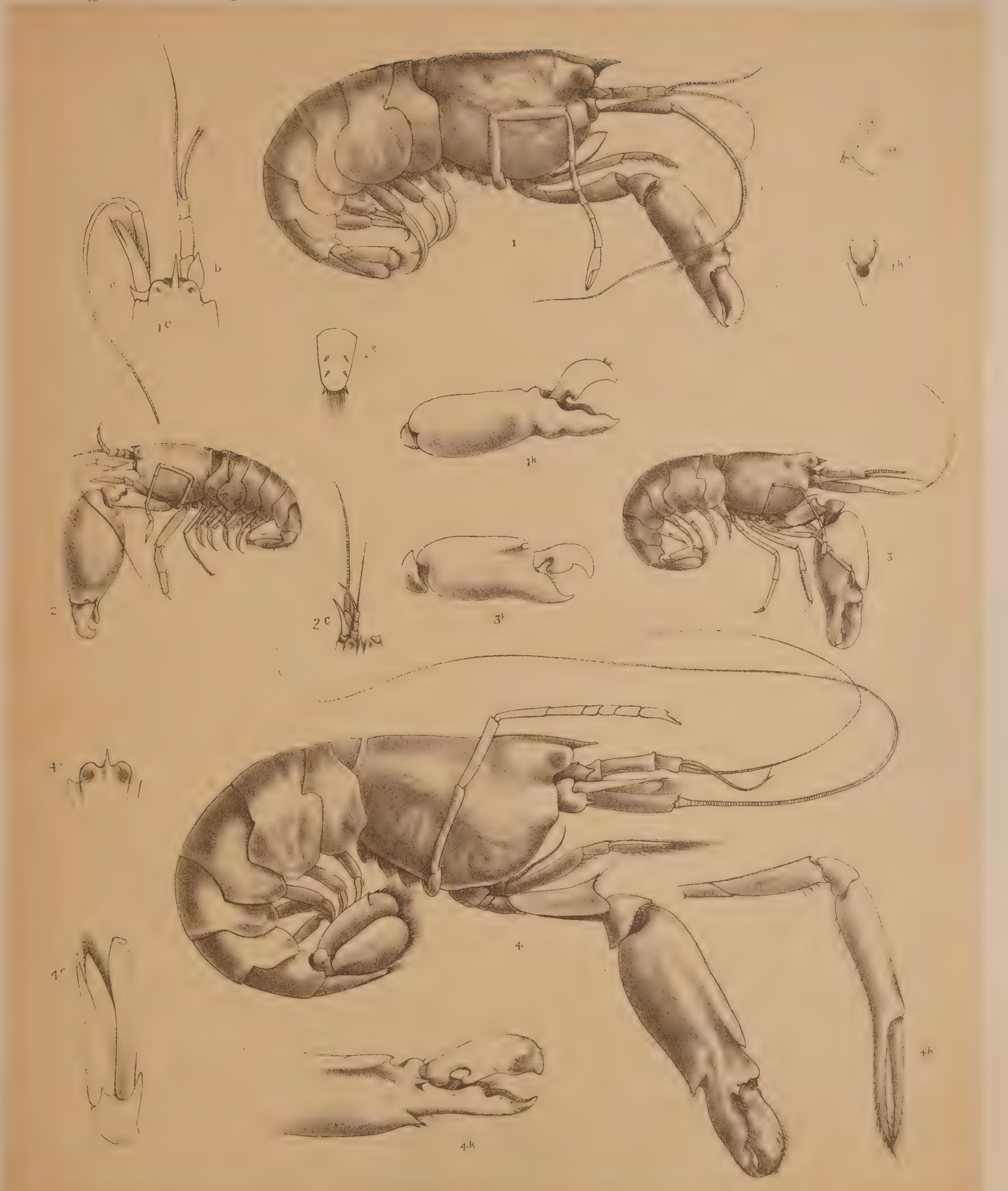
„ 4. Lateral view; enlarged three times.

„ 4c. Cephalon; frontal margin.

„ 4*c*. Second antenna; scaphocerite.

„ 4*k*. First pereiopod; larger chela.

„ 4*k*′. First pereiopod; smaller chela of left side.



J.S.B. ac nat. J.C.Richards lith.

Hanhart imp

1. ALPHEUS LEVIUSCULUS, var
2. „ CRINITUS.
3. ALPHEUS BERMUDENSIS.
4. „ LONGIMANUS.

PLATE XCIX.

PLATE XCIX.

Alpheus rapax (p. 552).

Fig. 1. Lateral view; enlarged twice.

„ 1c. Cephalon; *b*, first antenna, left side; *c*, second antenna, right side.

„ 1*k*. First pereiopod; larger chela.

„ 1*k*″. First pereiopod; showing dactylos and pollex, enlarged.

„ 1z. Telson.

Alpheus crassimanus (p. 554).

„ 2. Lateral view; enlarged twice.

„ 2*k*. First pereiopod; larger chela.

Alpheus lævis (p. 555).

„ 3. Lateral view; enlarged three times.

„ 3c. Cephalon, with first and second antennæ.

„ 3c′. Carapace, showing vessels of circulation.

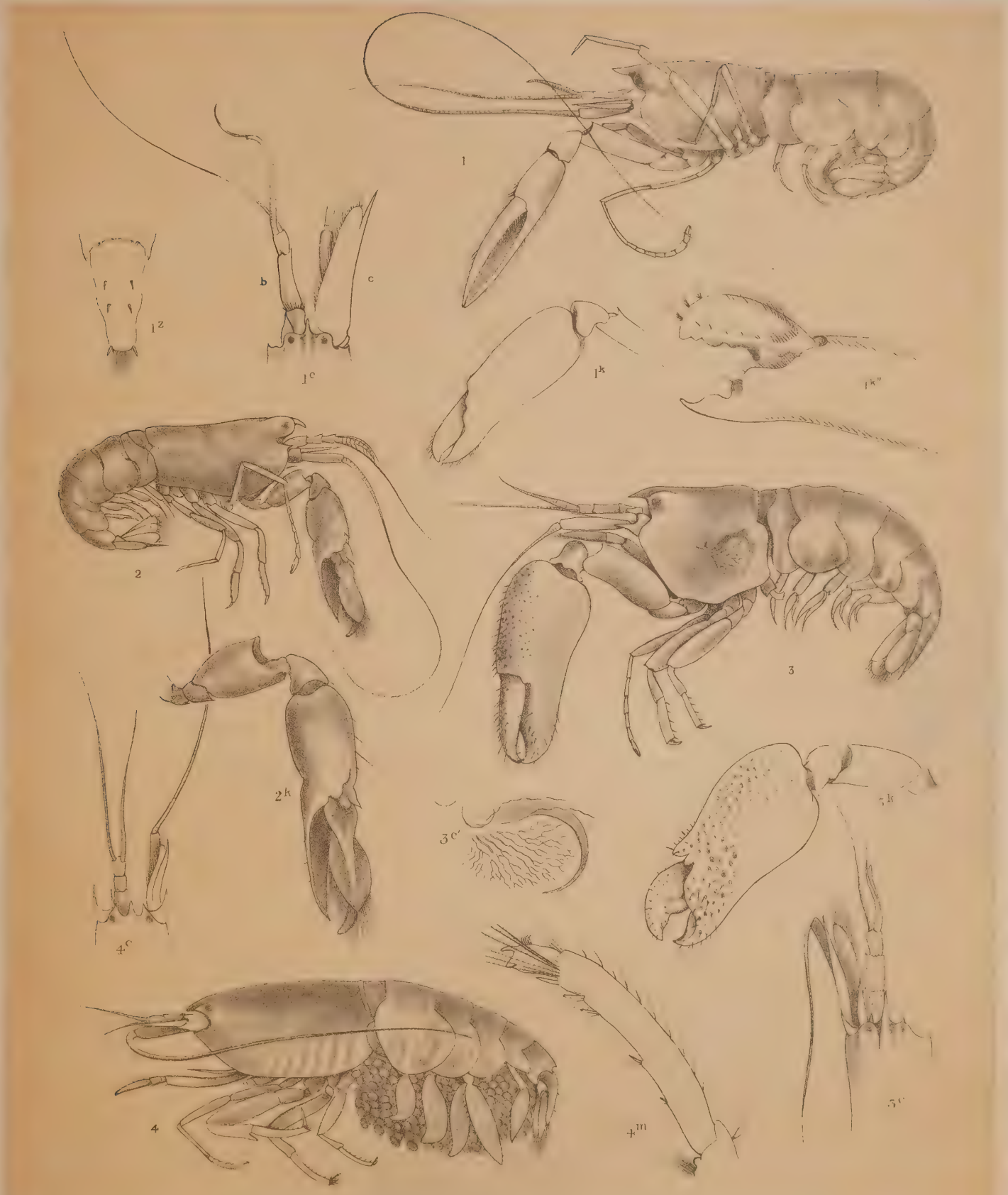
„ 3*k*. First pereiopod; larger chela.

Alpheus prolificus (p. 556).

„ 4. Lateral view; enlarged three times.

„ 4c. Cephalon, with first and second antennæ.

„ 4*m*. Third pereiopod.



C S B ad nat J C Richards lith.

Hanhart imp.

1. ALPHEUS RAPAX. 3. ALPHEUS LÆVIS.
2. „ CRASSIMANUS. 4. „ PROLIFICUS.

PLATE C.

PLATE C.

Alpheus intrinsecus (p. 557).

Fig. 1. Lateral view; female, enlarged three times.

„ 1c. Cephalon, frontal region.

„ 1c″. Cephalon; *b*, first antenna; *c*, second antenna.

„ 1*k*. First pereiopod; smaller chela.

„ 1*q*. Second pleopod, with ova attached.

„ 1z. Telson.

Alpheus minus (p. 558).

„ 2. Lateral view; enlarged four times.

„ 2*k*. First pereiopod; larger chela.

„ 2*k*″. First pereiopod; pollex and dactylos.

Alpheus spiniger (p. 560).

„ 3. Lateral view; enlarged three times.

„ 3c. Cephalon, with first and second antennæ.

„ 3*k*. First pereiopod; larger chela.

„ 3*k*′. First pereiopod; smaller chela, left.

„ 3*k*″. First pereiopod, showing form of dactylos.

„ 3*m*. Third pereiopod; dactylos.

„ 3z. Telson.

C.S.B. ad nat. J.C. Richards lith.

Hanhart imp.

1. ALPHEUS INTRINSECUS. 2. ALPHEUS MINUS.
3. ALPHEUS SPINIGER.

PLATE CI.

PLATE CI.

Alpheus avarus (p. 544).

Fig. 1. Lateral view; enlarged twice.

Alpheus neptunus (p. 563).

„ 2. Lateral view; enlarged twice.
„ 2*k*. First pereiopod; larger chela, left.
„ 2*k'*. First pereiopod; smaller chela, right.

Alpheus gracilipes (p. 561).

„ 3. Lateral view; enlarged three times.
„ 3c. Cephalon, frontal region.
„ 3*k*. First pereiopod; larger chela.
„ 3*m*. Third pereiopod; terminal joints.
„ 3z. Telson.

Alpheus biunguiculatus (p. 562).

„ 4. Lateral view; enlarged three times.
„ 4*o*. Fifth pereiopod; terminal joints.
„ 4z. Telson.

Betæus malleodigitus (p. 565).

„ 5. Lateral view; enlarged three times.
„ 5c. Cephalon, frontal region.
„ 5*c*. Second antennæ; scaphocerite.
„ 5*k*. First pereiopod; larger chela.
„ 5*l*. Second pereiopod.
„ 5*p*. First pleopod, with parasites attached to peduncle; stylamblys detached and enlarged.
„ 5*par*. Parasitic vesicle, detached; escaped ovum, enlarged.
„ 5z. Telson.

Betæus microstylus (p. 566).

„ 6. Lateral view; enlarged three times.
„ 6c. Cephalon, frontal region and scaphocerites.
„ 6*c*. Second antennæ; scaphocerite, enlarged.
„ 6z. Telson.

C.S.Bradnat. J.C.Richards lith.

Hanhart imp

1. ALPHEUS AVARUS.
2. „ NEPTUNUS.
3. „ GRACILIPES.
4. ALPHEUS BIUNGUICULATUS.
5. BETÆUS MALLEODIGITUS.
6. „ MICROSTYLUS.

PLATE CII.

PLATE CII.

Paralpheus diversimanus (p. 568).

Fig. 1. Lateral view; enlarged three times.

b. First antenna.

c. Second antenna.

d. Mandible.

e. First siagnopod.

f. Second siagnopod.

g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod.

k. First pereiopod; smaller chela.

p. First pleopod.

q. Second pleopod.

r. Third pleopod.

vzv. Rhipidura.

..S.B. ad nat. W. Purkiss lith.

Hanhart imp.

PARALPHEUS DIVERSIMANUS.

PLATE CIII.

PLATE CIII.

Synalpheus falcatus (p. 574).

Fig. 1. Lateral view; enlarged three times

c. Cephalon, frontal region; with *b*, first, and *c*, second antenna.

d. Mandible.

e. First siagnopod.

f. Second siagnopod.

g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod.

k. First pereiopod; larger chela, left.

k'. Chela open to show the form of the dactylos.

k''. First pereiopod; smaller chela, right side.

m. Third pereiopod; terminal joints.

q. Second pleopod, bearing ova.

zv. Rhipidura.

C.S.Badnar. J.C.Richards lith. Hanhart imp.

SYNALPHEUS FALCATUS

PLATE CIV.

PLATE CIV.

Latreutes ensiferus (p. 583).

Fig 1. Lateral view; enlarged six times.

„ 1*d*. Mandible.

„ 1*e*. First siagnopod.

„ 1*f*. Second siagnopod.

„ 1*g*. Third siagnopod.

„ 1*h*. First gnathopod.

„ 1*i*. Second gnathopod.

„ 1*k*. First pereiopod.

„ 1*l*. Second pereiopod.

„ 1*m*. Third pereiopod; distal joints.

„ 1*q*. Second pleopod, with ova attached.

Platybema rugosum (p. 579).

„ 2. Lateral view; enlarged six times.

„ 2*d*. Mandible.

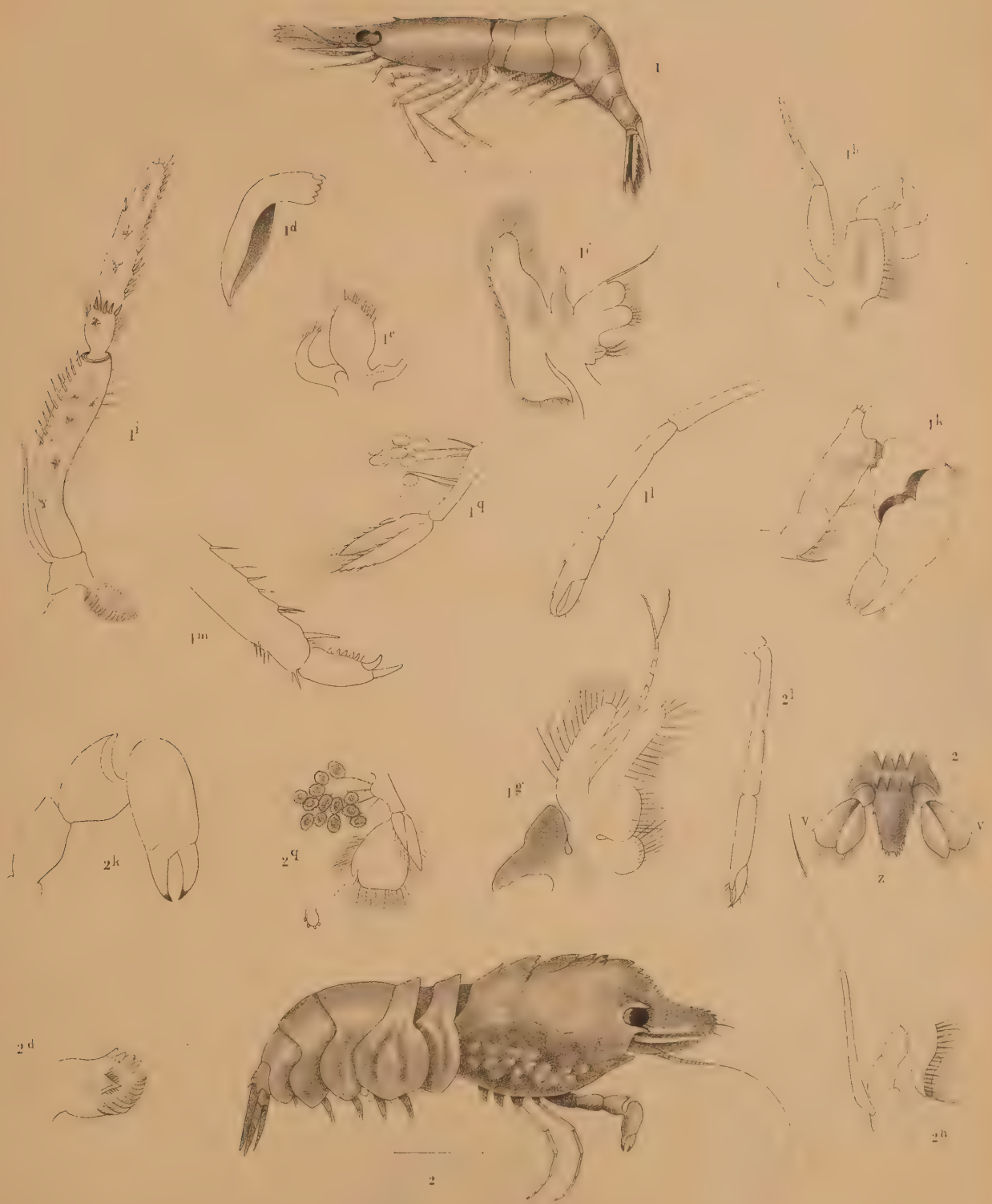
„ 2*h*. First gnathopod.

„ 2*k*. First pereiopod.

„ 2*l*. Second pereiopod.

„ 2*q*. Second pleopod, with ova attached, and stylamblys detached and magnified.

„ 2*vzv*. Rhipidura.



1. LATREUTES ENSIFERUS. 2. PLATYBEMA RUGOSUM.

PLATE CV.

PLATE CV.

Hippolyte bidentatus (p. 591).

Fig. 1. Lateral view of male; enlarged three times.

„ 1*b*. First antennæ.

„ 1*d*. Mandible.

„ 1*e*. First siagnopod.

„ 1*g*. Third siagnopod.

„ 1*h*. First gnathopod.

„ 1*i*. Second gnathopod.

„ 1*k*. First pereiopod.

„ 1*l*. Second pereiopod.

„ 1*m*. Third pereiopod; distal joints.

„ 2. Lateral view of female; enlarged three times.

„ 2c′. Rostrum; magnified.

Hippolyte projecta (p. 594).

„ 3. Lateral view; enlarged three times.

„ 3*a*. Ophthalmopod.

„ 3*b*. First antenna.

1, 2. HIPPOLYTE BIDENTATUS.
3. Do PROJECTA.

PLATE CVI.

PLATE CVI.

Spirontocaris spinus (p. 596).

Fig. 1. Rostrum, after Leach, var. α.

„ 2. Lateral view of animal, after Owen, var. β.

„ 3. Lateral view of var. γ.

„ 4. Lateral view of var. ϵ.

„ 5. Ventral aspect of same, with saccular parasite attached.

„ 6. Ventral aspect of same, with *Phryxus* attached.

„ 7. Lateral view of var. ζ; ophthalmopoda removed.

„ 8. Rostrum of var. η.

„ 9. *Phryxus*, female, ♀, with male, ♂, attached.

„ 10. Parasite from fig. 5; enlarged.

1α
3γ
7ζ
8η
4ε
5ε
6ε
10
♀
♂
9
2β

PLATE CVII.

PLATE CVII.

Spirontocaris spinus, var. δ (p. 599).

Fig. 1. Lateral view; enlarged three times.

a. Ophthalmopod.

b. First antenna.

c. Second antenna; scaphocerite.

d. Mandible.

e. First siagnopod.

f. Second siagnopod.

h. First gnathopod.

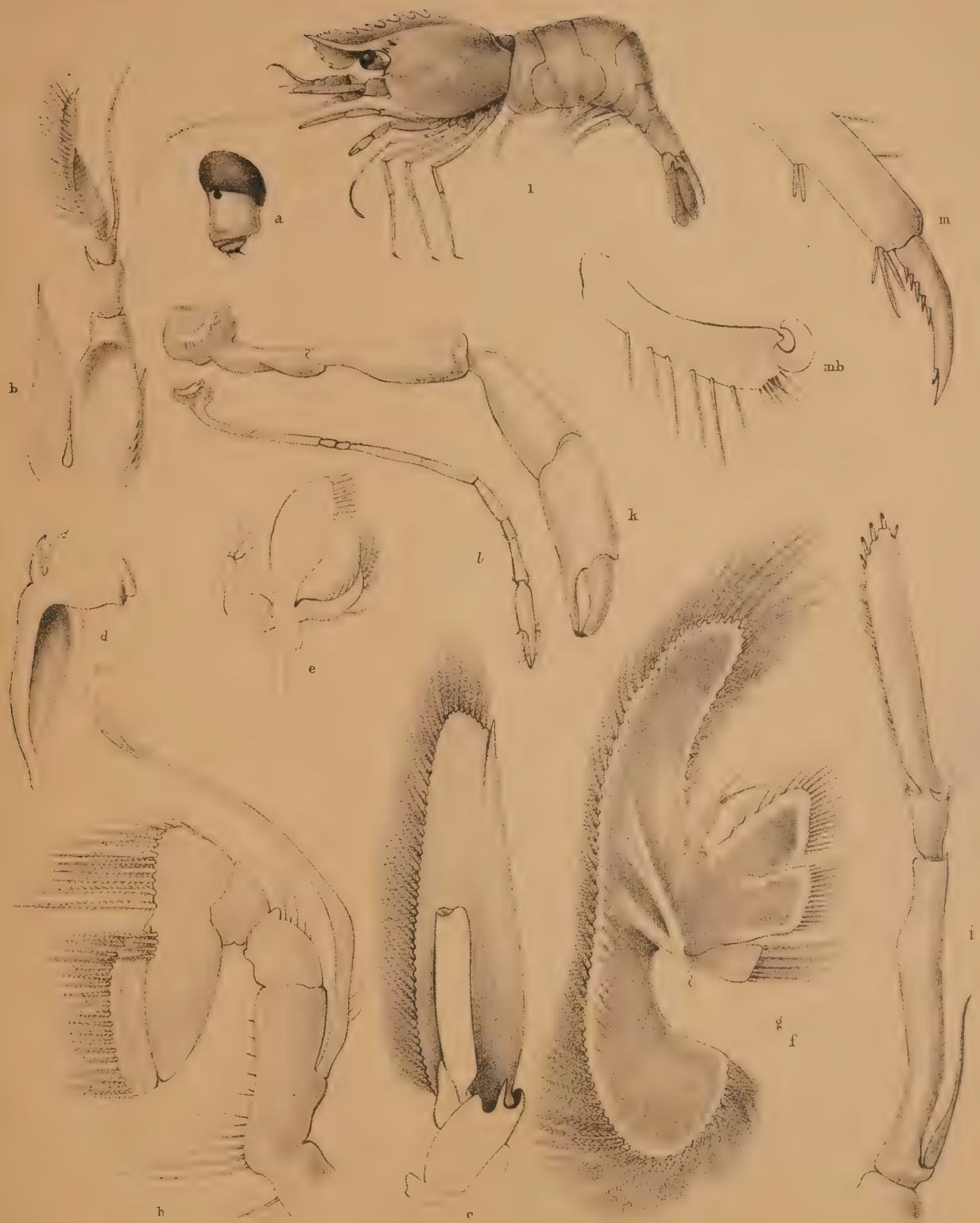
i. Second gnathopod.

k. First pereiopod.

l. Second pereiopod.

m. Third pereiopod; distal joints.

mb. Mastigobranchia.



SPIRONTOCARIS SPINUS.

PLATE CVIII.

PLATE CVIII.

Nauticaris marionis (p. 603).

Fig. 1. Lateral view; enlarged twice.

a. Ophthalmopod.

b. First antenna.

c. Second antenna, scaphocerite.

d. Mandible.

e. First siagnopod.

f. Second siagnopod.

g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod.

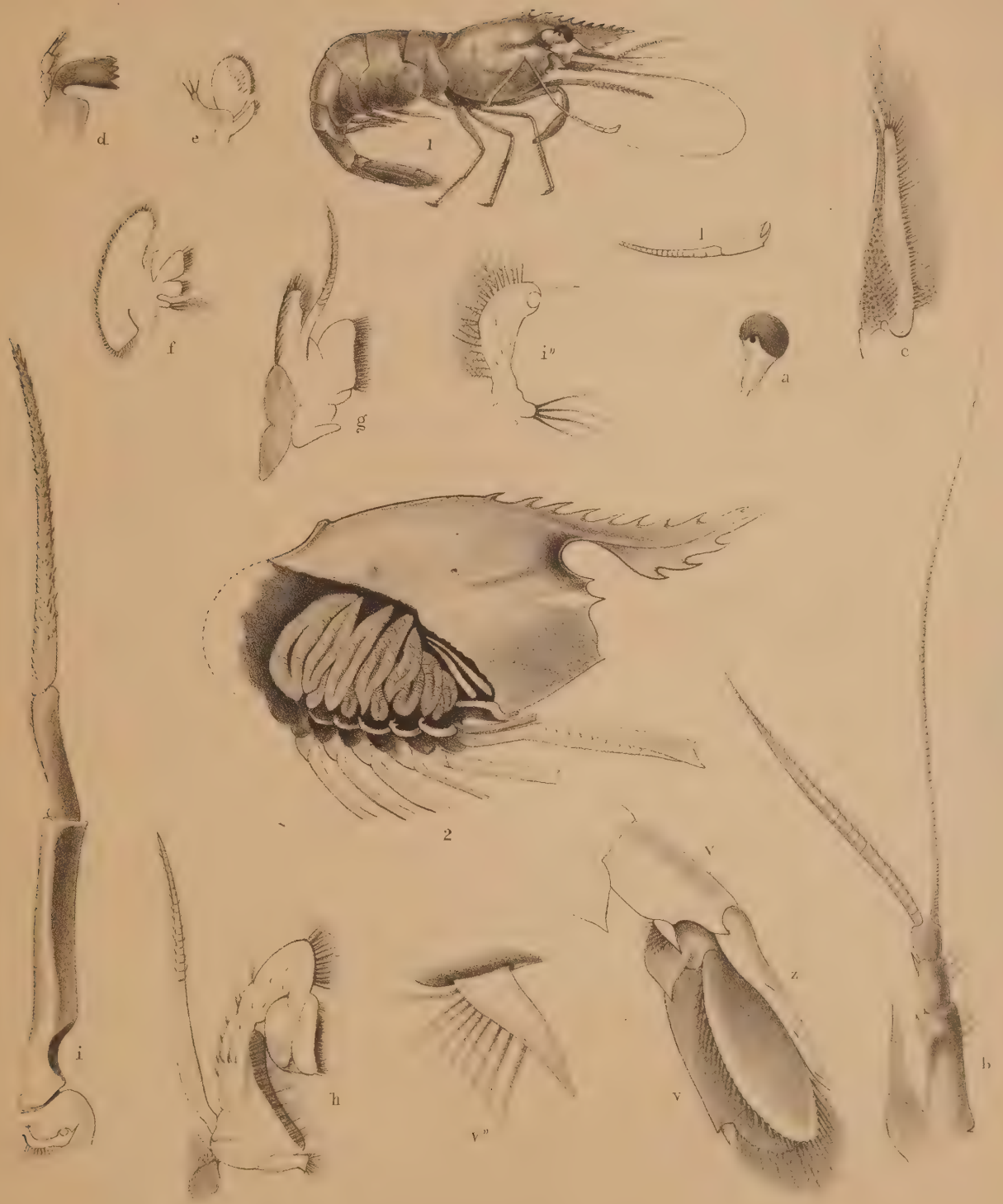
i''. Second gnathopod; mastigobranchia.

l. Second pereiopod.

v. Sixth somite; v'', articulated process at the infero-posterior angle.

vz. Rhipidura; lateral view.

„ 2. Branchial apparatus *in situ*.



C.S.B. ad nat. W. Purkiss lith.

NAUTICARIS MARIONIS.

PLATE CIX.

PLATE CIX.

Nauticaris futilirostris (p. 606).

Fig. 1. Lateral view; enlarged twice.

Hetairus gaimardii (p. 611).

„ 2. Lateral view; enlarged four times.

„ 2*d*. Mandible.

„ 2*g*. Third siagnopod.

„ 2*h*. First gnathopod.

Hetairus tenuis (p. 613).

„ 3. Lateral view; enlarged three times.

Hetairus debilis (p. 615).

„ 4. Lateral view; enlarged four times.

C.S.R. ad nat, W. Purkiss lith.

Hanhart imp

1. NAUTICARIS FUTILIROSTRIS. 3. HETAIRUS TENUIS.
2. HETAIRUS GAIMARDII. 4. Dº DEBILIS.

PLATE CX.

PLATE CX.

Nauticaris unirecedens (p. 608).

Fig. 1. Lateral view; enlarged five times.

Chorismus tuberculatus (p. 617).

„ 2. Lateral view.

„ 2*a*. Ophthalmopod.

„ 2*d*. Mandible.

Amphiplectus depressus (p. 623).

„ 3. Lateral view; enlarged twice.

„ 3*d*. Mandible.

„ 3*i*. First gnathopod.

Merhippolyte agulhasensis (p. 619).

„ 4. Lateral view; enlarged twice.

„ 4*a*. Ophthalmopod.

„ 4*i*. Second gnathopod.

C.S.B. ad nat. W. Purkiss lith.

Hanhart imp

1. NAUTICARIS UNIRECEDENS. 3. AMPHIPLECTUS DEPRESSUS.
2. CHORISMUS TUBERCULATUS. 4. MERHIPPOLYTE AGULHASENSIS.

PLATE CXI.

PLATE CXI.

Heterocarpus dorsalis (p. 630).

Fig. 1 ♀. Lateral view of female.

b. First antenna.

c. Second antenna; scaphocerite.

d. Mandible; synaphipod detached.

f. Second siagnopod.

g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod.

k. First pereiopod.

l. Second pereiopod.

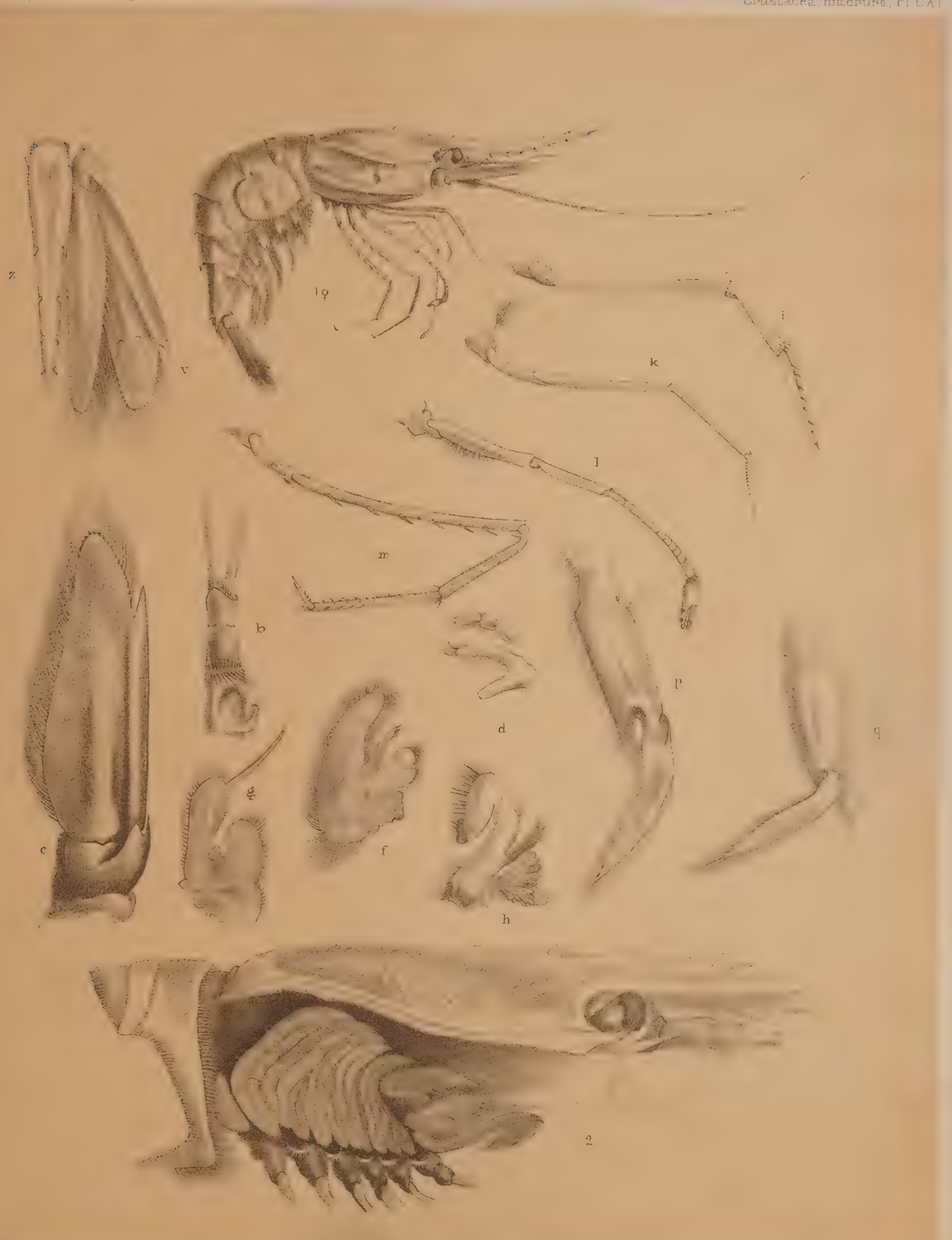
m. Third pereiopod.

p. First pleopod.

q. Second pleopod.

zv. Rhipidura.

„ 2. Branchiæ in natural position.



C.S.B. ad nat. W. Purkiss lith.

Hanhart imp.

HETEROCARPUS DORSALIS.

PLATE CXII.

PLATE CXII.

Heterocarpus alphonsi (p. 632).

Fig. 1. Lateral view.

„ 1*l*, 1*l'*. Second pereiopod; right and left.

Heterocarpus gibbosus (p. 634).

„ 2. Lateral view; enlarged twice.

„ *i*. First gnathopod.

„ *k*, *l*, *m*. First three pereiopoda.

„ 2z. Telson.

Heterocarpus lævigatus (p. 636).

„ 3. Lateral view.

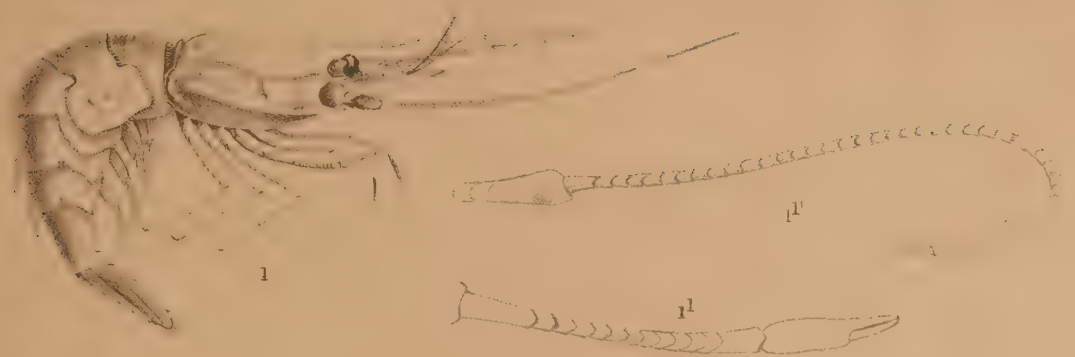
Heterocarpus ensifer (p. 638).

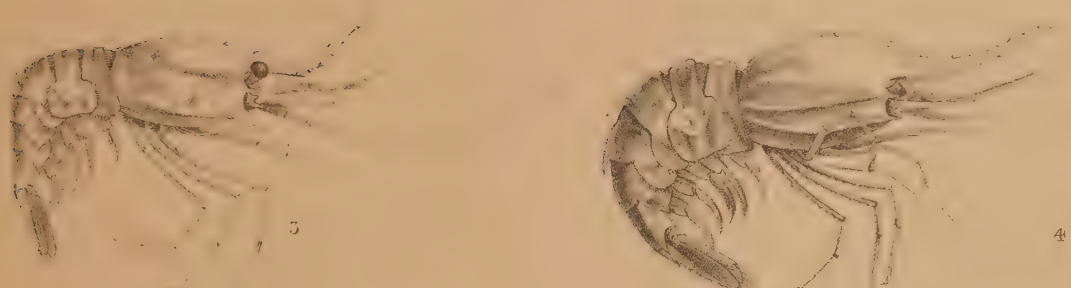
„ 4. Lateral view.

Dorodotes levicarina (p. 680).

„ 5. Lateral view; enlarged twice.

„ 5*l*. Second pereiopod.





C. S. B. ad nat. W. Parkiss lith.

Hanhart imp.

1. HETEROCARPUS ALPHONSI 3. HETEROCARPUS LÆVIGATUS.
2. Dº GIBBOSUS. 4. Dº ENSIFER.
5. DORODOTES LEVICARINA

PLATE CXIII.

PLATE CXIII.

Plesionika uniproducta (p. 641).

Fig. 1. Lateral view.

„ 1*a*, *a*. Ophthalmopoda.

„ 1*b*. First antenna.

„ 1*c*. Second antenna; scaphocerite.

„ 1*ant*., 1*post*. Epistoma and metastomata in relative position.

„ 1*d*. Mandible.

„ 1*e*. First siagnopod.

„ 1*f*. Second siagnopod.

„ 1*g*. Third siagnopod.

„ 1*h*. First gnathopod.

„ 1*l*. Second pereiopod, right.

„ 1*l'*. Second pereiopod, left.

Plesionika spinipes (p. 646).

„ 2. Lateral view; enlarged twice.

„ 2*k*. First pereiopod, terminal joints.

„ 2*m*. Third pereiopod, articulation of mero-carpal joint.

Plesionika semilævis (p. 644).

„ 3. Lateral view; slightly enlarged.

„ 3*b*. First antenna.

Plesionika unidens (p. 648).

„ 4. Lateral view; slightly enlarged.

Plesionika brevirostris (p. 650).

„ 5. Lateral view.

„ 5*l*. Second pereiopod.

C.S Badnat J.C.Richards lith.

Hanhart imp

1. PLESIONIKA UNIPRODUCTA. 3. PLESIONIKA SEMILÆVIS.
2. Dº SPINIPES. 4. Dº UNIDENS.
5. PLESIONIKA BREVIROSTRIS.

PLATE CXIV.

PLATE CXIV.

Nothocaris rostricrescentis (p. 653).

Fig. 1. Lateral view.

„ 1*r.c.* Rostral crest.

„ 1*a.* Ophthalmopod.

„ 1*b.* First antenna.

„ 1*d.* Mandible.

„ 1*h.* First gnathopod.

„ 1*i.* Second gnathopod.

„ 1*k.* First pereiopod.

„ 1*k''.* First pereiopod, terminal joints.

„ 1z. Telson.

Nothocaris binoculus (p. 656).

„ 2. Lateral view.

„ 2*r.c.* Rostral crest.

„ 2*a.* Ophthalmopod.

Nothocaris ocellus (p. 657).

„ 3. Lateral view.

, 3*r.c.* Rostral crest.

Pandalus modestus (p. 670).

„ 4. Lateral view; enlarged four times.

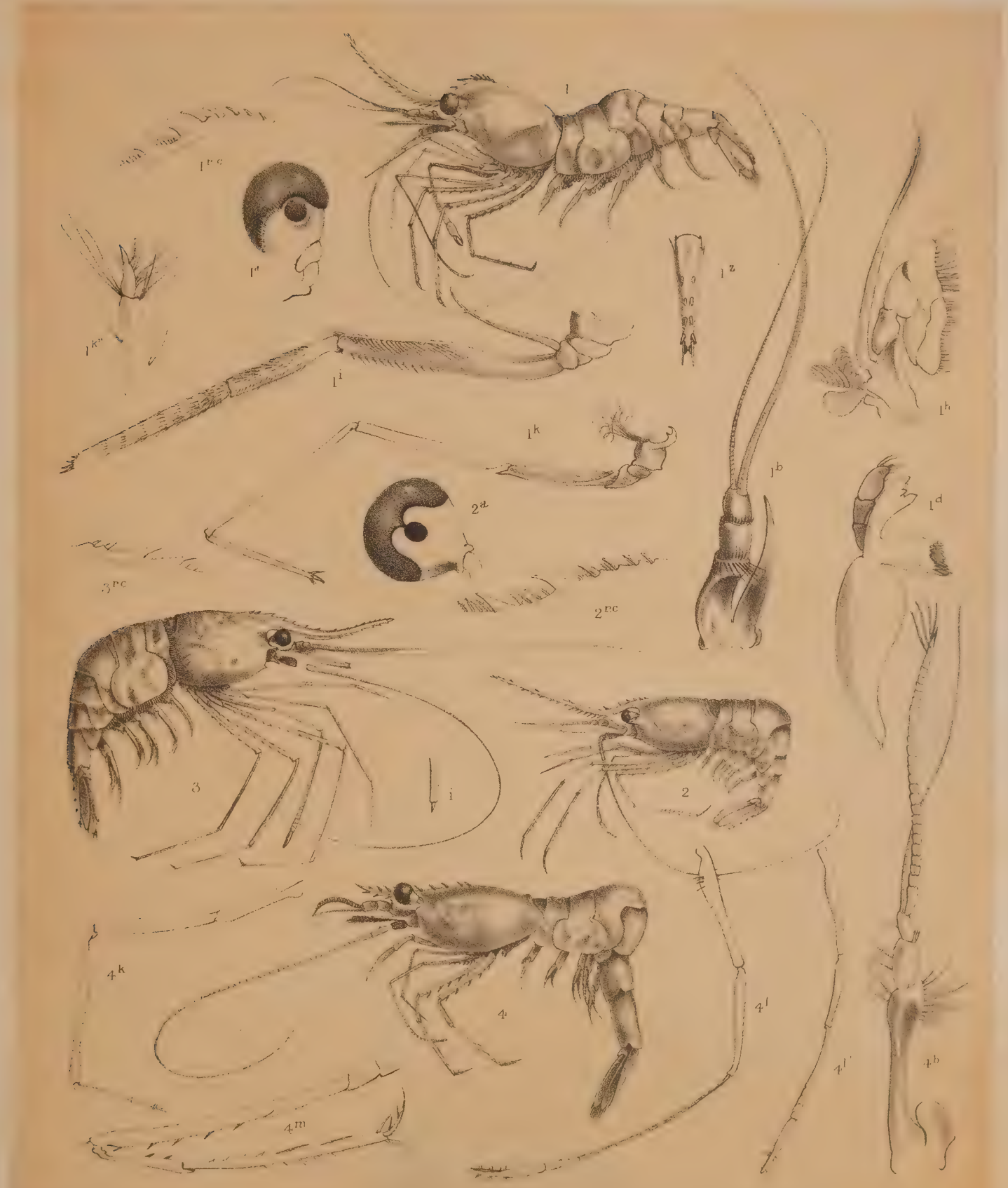
„ 4*b.* First antenna.

„ 4*k.* First pereiopod.

„ 4*l.* Second pereiopod, right.

„ 4*l'.* Second pereiopod, left.

„ 4*m.* Third pereiopod.



C.S.B. ad nat. W. Purkiss lith. Hanhart imp

1. NOTHOCARIS ROSTRICRESCENTIS 3. NOTHOCARIS OCELLUS
2. " BINOCULUS 4. PANDALUS MODESTUS

PLATE CXV.

PLATE CXV.

Pandalus magnoculus (p. 667).

Fig. 1. Lateral view; enlarged twice.

„ 1*a*. Ophthalmopod.

„ 1*b*. First antenna.

„ 1z. Telson.

Pandalus falcipes (p. 668).

„ 2. Lateral view; enlarged twice.

„ 2*a*. Ophthalmopod.

„ 2*b*. First antenna.

„ 2z. Telson.

Pandalopsis amplus (p. 671).

„ 3. Lateral view.

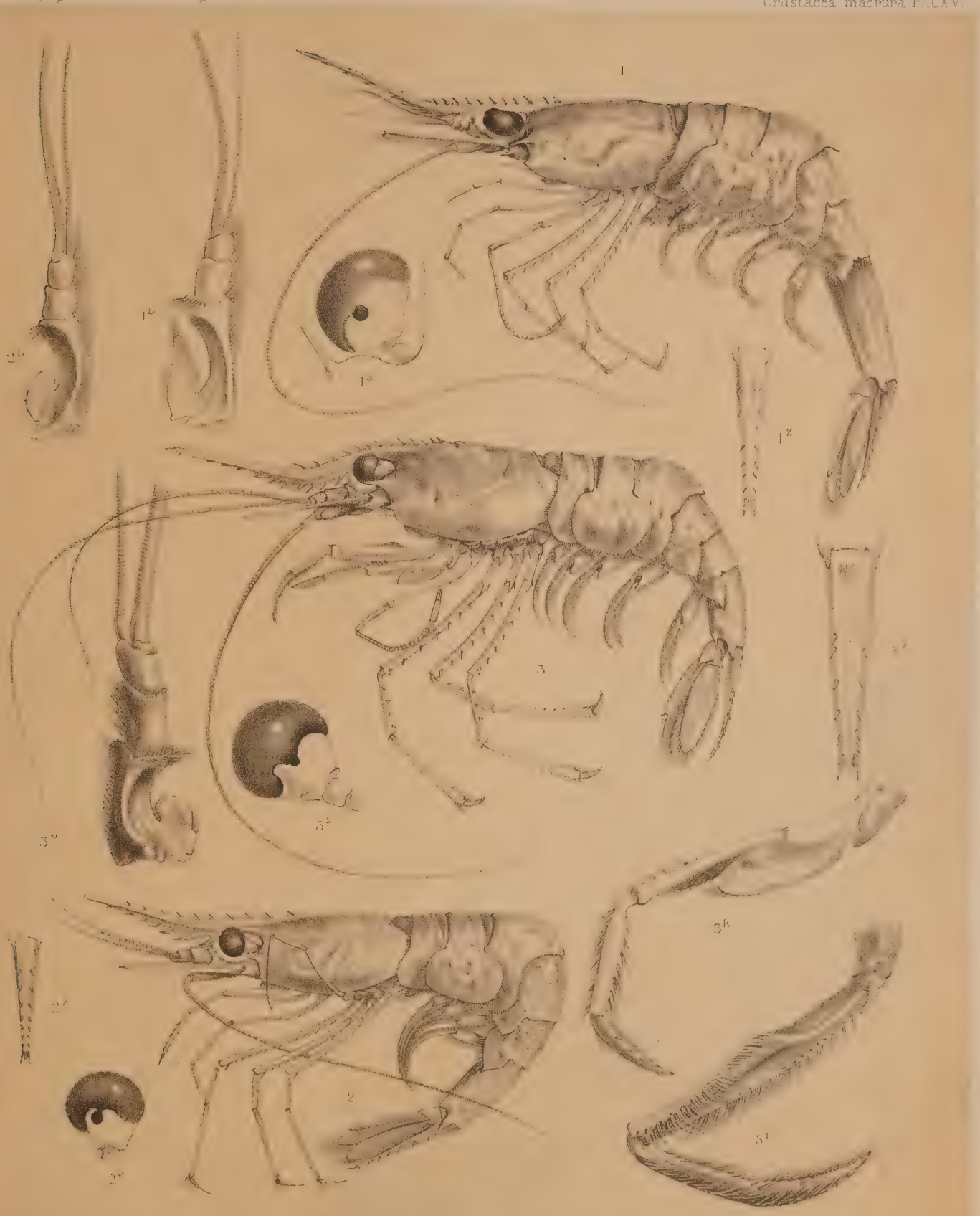
„ 3*a*. Ophthalmopod.

„ 3*b*. First antenna.

„ 3*i*. Second gnathopod.

„ 3*k*. First pereiopod.

„ 3z. Telson.



C & B. ad nat. W. Parkins lith

Hanhart imp

1. PANDALUS MAGNOCULUS.
2. " FALCIPES.
3. PANDALOPSIS AMPLUS.

PLATE CXVI.

PLATE CXVI.

Chlorotocus incertus (p. 674).

Fig. 1. Lateral view; enlarged twice.

„ 1*a*. Ophthalmopod.

„ 1*b*. First antenna.

„ 1*c*. Second antenna.

„ 1*d*. Mandible.

„ 1*e*. First siagnopod.

„ 1*f*. Second siagnopod.

„ 1*g*. Third siagnopod.

„ 1*h*. First gnathopod.

„ 1*i*. Second gnathopod.

„ 1*k*. First pereiopod.

„ 2. Pereion, showing branchial arrangement.

Dorodotes reflexus (p. 678).

„ 3. Lateral view.

„ 3*a*. Ophthalmopod.

Nothocaris geniculatus (p. 661).

„ 4. Lateral view of female.

„ 4*a*. Ophthalmopod.

„ 4*q*. Second pleopod; stylamblys detached.

Hanhart imp

1, 2. CHLOROTOCUS INCERTUS.
3. DORODOTES REFLEXUS.
4. NOTHOCARIS GENICULATUS.

PLATE CXVII.

PLATE CXVII.

Thalassocaris danæ (p. 683).

Fig. 1. Lateral view; enlarged ten times.

„ 1*b*. First antenna.

„ 1*c*. Second antenna; 1*c*″, inner margin of scaphocerite, enlarged.

Thalassocaris stimpsoni (p. 684).

„ 2. Dorsal view; enlarged ten times.

Diaphoropus versipellis (p. 687).

„ 3. Lateral view; enlarged ten times.

„ 3*k*. First pereiopod.

„ 3*l*. Second pereiopod.

„ 3*m*. Third pereiopod.

„ 3*o*. Fourth pereiopod.

Diaphoropus longidorsalis (p. 688).

„ 4. Lateral view; enlarged eighteen times.

C.S.B. ad nat. J.C.Richards lith.

Hanhart imp.

1. THALASSOCARIS DANÆ. 3. DIAPHOROPUS VERSIPELLIS.
2. Dº STIMPSONI. 4. Dº LONGIDORSALIS.

PLATE CXVIII.

PLATE CXVIII.

Atya sulcatipes (p. 694).

Fig. 1. Lateral view; slightly enlarged.

b. First antenna.

c. Second antenna, with three articuli of the flagellum enlarged.

d. Mandible.

f. Second siagnopod.

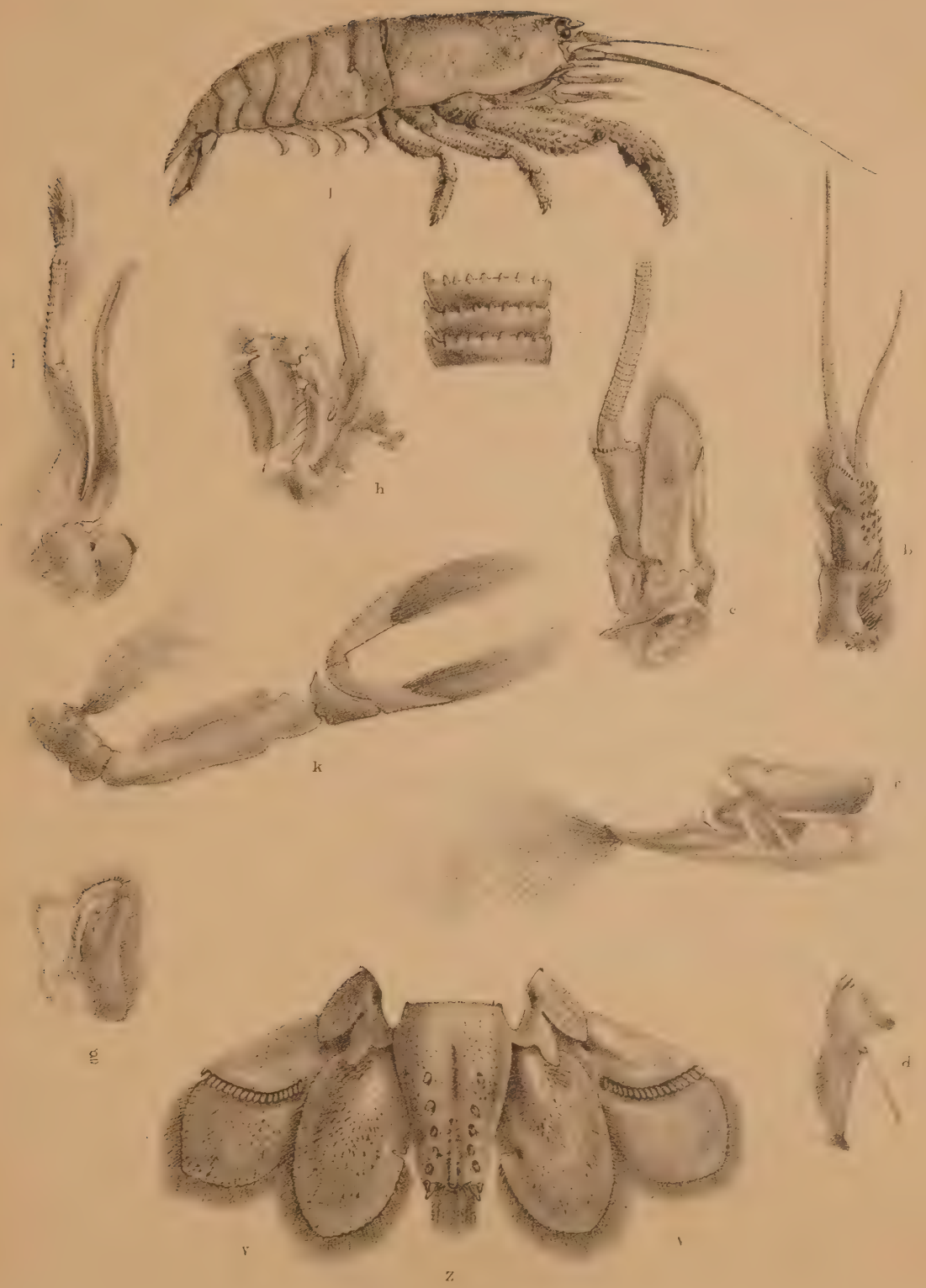
g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod.

k. First pereiopod.

v, z, *v*. Rhipidura.



C. S. Bad nat. J. C. Richards lith.

Harbart imp.

ATYA SULCATIPES.

PLATE CXIX.

PLATE CXIX.

Atya sulcatipes (p. 694).

Fig. 1. Lateral view, showing branchiæ.

„ 1*p*. First pleopod.

„ 1*q*. Second pleopod.

Atya serrata (p. 699).

„ 2. Lateral view; enlarged twice.

„ 2*a*. Ophthalmopod.

Caridina typus (p. 704).

„ 3. Part of pereion, with appendages.

„ 3*d*. Mandible.

„ 3*i*. Second gnathopod.

„ 3*k*. First pereiopod.

„ 3*l*. Second pereiopod.

„ 3*m*. Third pereiopod.

C.S.B. ad nat. J.C.Richards lith.

Hanhart imp.

1. ATYA SULCATIPES.
2. Dº SERRATA.
3. CARIDINA TYPUS

PLATE CXX.

PLATE CXX.

Atya bisulcata (p. 700).

Fig. 1. Lateral view; enlarged twice.

b. First antenna.

c. Second antenna.

d. Mandible; inner and outer surfaces.

e. First siagnopod.

f. Second siagnopod.

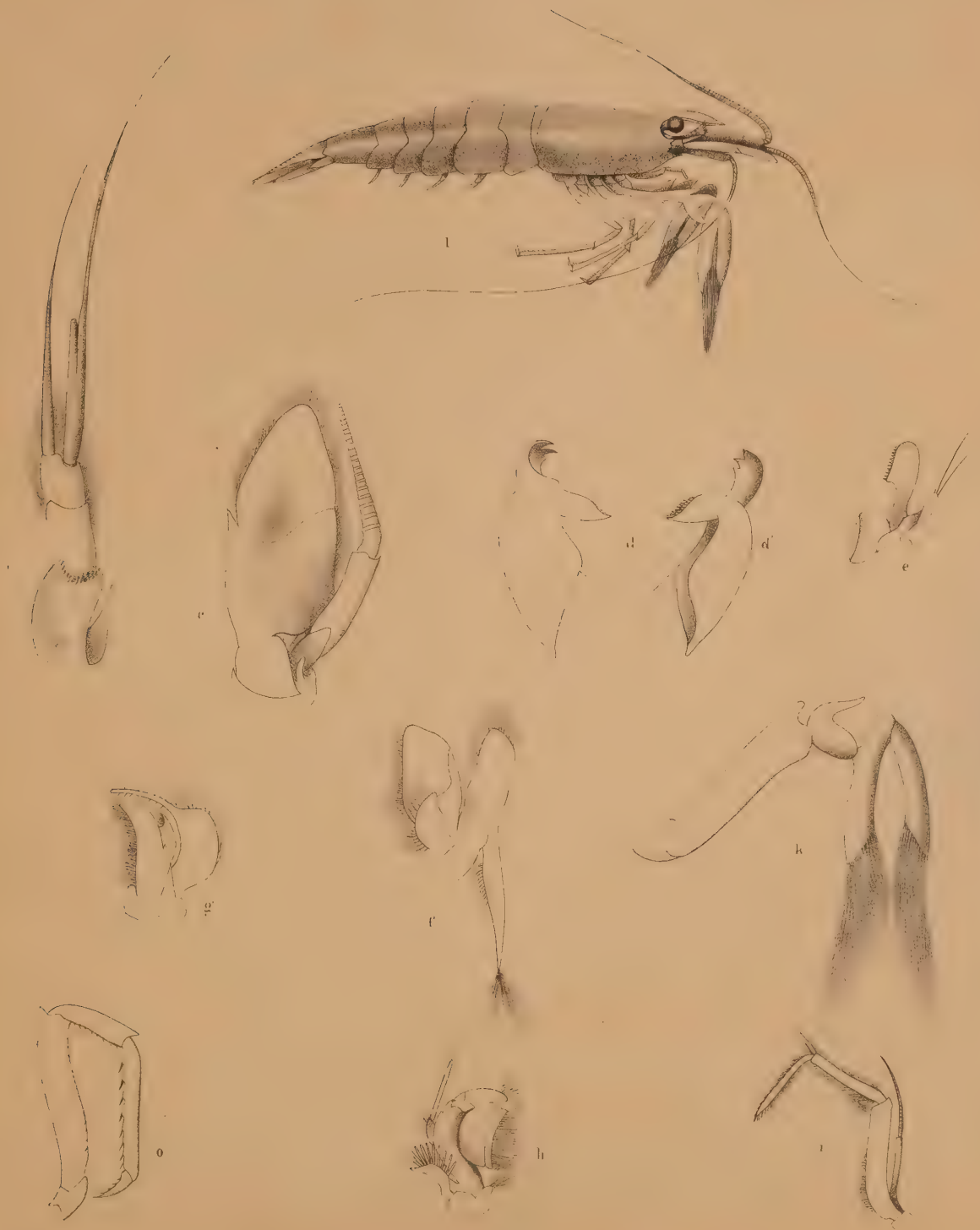
g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod.

k. First pereiopod.

o. Fifth pereiopod.



ATYA BISULCATA.

PLATE CXXI.

PLATE CXXI.

Kyptocaris stylofrontalis (p. 690).

Fig. 1. Lateral view; enlarged twelve times.

„ 1*i*. Second gnathopod.

„ 1*k*. First pereiopod.

„ 1*l*. Second pereiopod.

„ 1*m*. Third pereiopod.

Caricyphus cornutus (p. 712).

„ 2. Lateral view; enlarged twenty-four times.

„ 2*i*. Second gnathopod.

„ 2*k*. First pereiopod.

Caricyphus serramarginis (p. 714).

„ 3. Lateral view; enlarged twelve times.

Caricyphus gibberosus (p. 716).

„ 4. Lateral view; enlarged ten times.

Caricyphus turgidus (p. 717).

„ 5. Lateral view; enlarged twenty-two times.

„ 5c. Lateral view of rostral crest.

Caricyphus angulatus (p. 718).

„ 6. Lateral view; enlarged eight times.

C.S.B. ad nat. J.C.Richards lith

Hanhart imp.

1. KYPTOCARIS STYLOFRONTALIS. 4. CARICYPHUS GIBBEROSUS.
2. CARICYPHUS CORNUTUS. 5. Dº TURGIDUS.
3. Dº SERRAMARGINIS. 6. Dº ANGULATUS.

PLATE CXXII.

PLATE CXXII.

Alpheus (Brephalos) (p. 538).

Fig. 1. Megalopa stage, lateral aspect; enlarged twenty times.

„ 1*c*. Second antenna; 1*f*, second siagnopod; 1*g*, third siagnopod; 1*h*, first gnathopod; 1*i*, second gnathopod; 1*k*, first pereiopod, right side; 1*k'*, first pereiopod, left side.

Atya (Brephalos) (p. 692).

„ 2. Ventral aspect; enlarged twenty times.

„ 2*ov*. Ovum; enlarged twenty times.

Campylonotus vagans (p. 775).

„ 3. Lateral view.

„ 3*b*. First antenna.

„ 3*c*. Second antenna.

„ 3*d*, 3*d'*. Mandible; inner and outer aspects.

„ 3*e*. First siagnopod.

„ 3*f*. Second siagnopod.

„ 3*g*. Third siagnopod.

„ 3*h*. First gnathopod.

„ 3*i*. Second gnathopod.

C.S.B. ad nat. J.C. Richards lith

1. ALPHEUS (BREPHALOS)
2. ATYA (BREPHALOS)
3. CAMPYLONOTUS VAGANS.

PLATE CXXIII.

PLATE CXXIII.

Anebocaris quadroculus (p. 722).

Fig. 1. Lateral view; enlarged nine times.

„ 1*k*. First pereiopod.

„ 1*l*. Second pereiopod.

„ 1*o*. Fifth pereiopod.

Rhomaleocaris hamulus (p. 720).

„ 2. Lateral view; enlarged nine times.

„ 2c. Rostrum.

„ 2c″. Antennal tooth.

„ 2*k*. First pereiopod.

Bentheocaris exuens (p. 724).

„ 3. Lateral view; enlarged five times.

„ 3c. Rostrum; magnified.

„ 3*a*. Ophthalmopod.

„ 3*b*. First antenna.

„ 3*c*″. Margin of scaphocerite.

„ 3*m*. Third pereiopod.

„ 3*n*. Fourth pereiopod.

„ 3*o*. Fifth pereiopod.

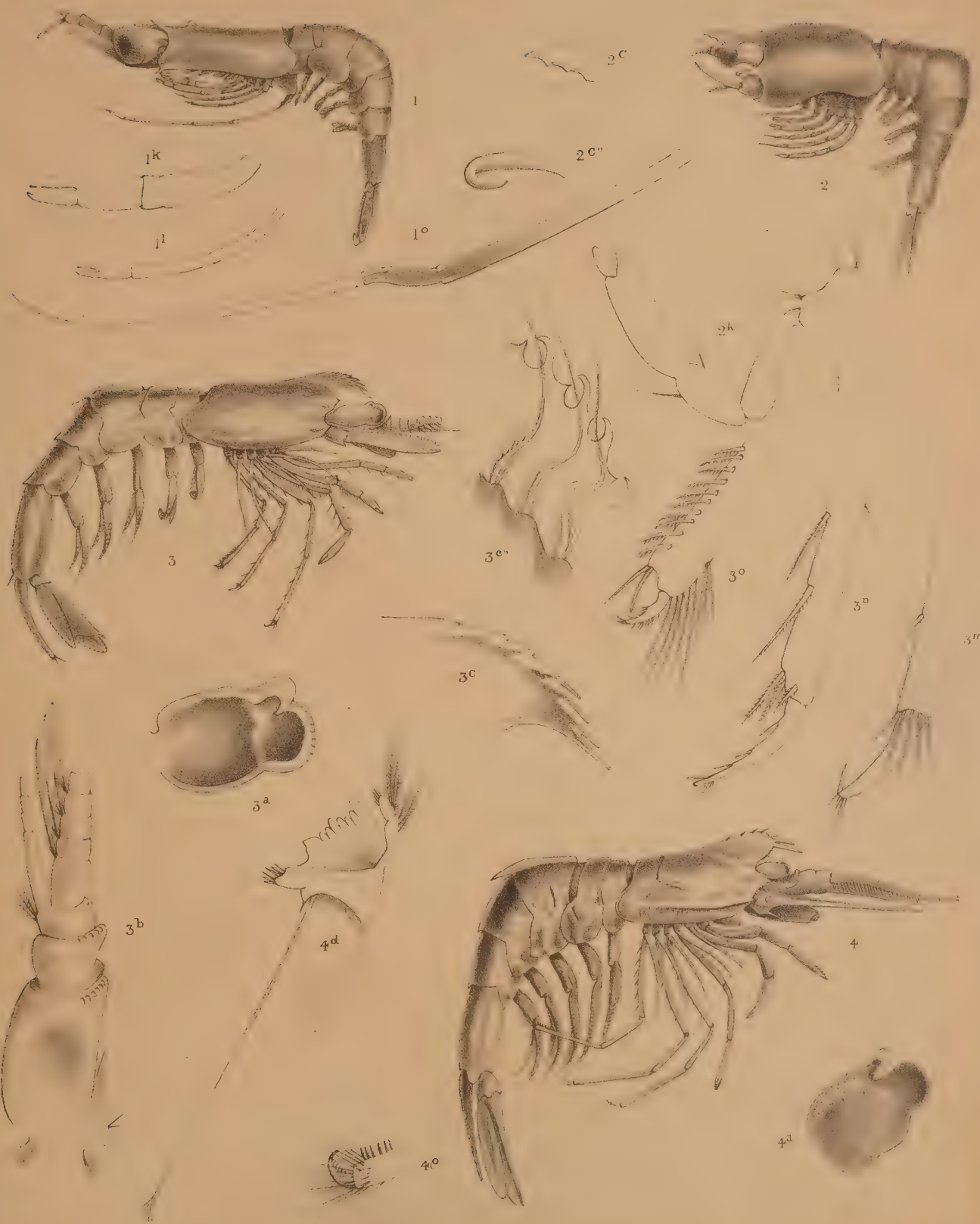
Bentheocaris stylorostratis (p. 726).

„ 4. Lateral view; enlarged three times.

„ 4*a*. Ophthalmopod.

„ 4*d*. Mandible.

„ 4*o*. Fifth pereiopod.



C.S.B. ad nat. J.C. Richards lith.

Hanhart imp.

1. ANEBOCARIS QUADROCULUS. 3. BENTHEOCARIS EXUENS.
2. RHOMALEOCARIS HAMULUS. 4. Do STYLORROSTRATIS.

PLATE CXXIV.

PLATE CXXIV.

Pontonia meleagrinæ (p. 707).

Fig. 1. Lateral view; enlarged three times.
„ 2. Dorsal view.
„ 1*b*. First antenna.
„ 1*c*. Scaphocerite.
„ 1*d*. Mandible.
„ 1*e*. First siagnopod.
„ 1*f*. Second siagnopod.
„ 1*g*. Third siagnopod.
„ 1*h*. First gnathopod.
„ 1*i*. Second gnathopod.
„ 1*p*. First pleopod.

Acanthephyra purpurea (p. 733).

„ 3. Lateral view; enlarged twice.

Acanthephyra longidens (p. 735).

„ 4. Lateral view; enlarged twice.
„ 4*a*. Ophthalmopod.

Acanthephyra media (p. 736).

„ 5. Lateral view; enlarged twice.
„ 5c. Rostrum of another specimen.

Acanthephyra angusta (p. 737).

„ 6. Lateral view.
„ 6*a*. Ophthalmopod.

Systellaspis lanceocaudata (p. 758).

„ 7. Lateral view; enlarged a half.
„ 7z. Telson.

C. S. Bradnat. J. Richards lith.

Hanhart imp.

1. 2. PONTONIA MELEAGRINÆ.
3. ACANTHEPHYRA PURPUREA.
4. Dº LONGIDENS.
5. ACANTHEPHYRA MEDIA.
6. Dº ANGUSTA.
7. SYSTELLASPIS LANCEOCAUDATA

PLATE CXXV.

PLATE CXXV.

Acanthephyra sica (p. 739).

Fig. 1. Lateral view of female.

,, 1*a*. Ophthalmopod.

,, 1*b*. First antenna.

,, 1*c*. Second antenna; under surface of scaphocerite.

,, 1*c*″. Upper surface of scaphocerite.

,, 1*d*. Mandible; *ch.a*, cheiloglossa; *d*, mandible; *ma*, metastoma.

,, 1*e*. First siagnopod.

,, 1*f*. Second siagnopod.

,, 1*g*. Third siagnopod.

,, 1*i*. Second gnathopod.

,, 1z. Telson.

Acanthephyra armata (p. 744).

,, 2. Lateral view of male.

,, 2*p*. First pleopod.

Acanthephyra acanthitelsonis (p. 745).

,, 3. Lateral view of male.

,, 3*b*. First antenna.

,, 3*c*. Second antenna, showing the scaphocerite with the flagellum undergoing reproduction.

,, 3z. Telson.

C.S.B. ad nat. J.C.Richards lith

Hanhart imp

1. ACANTHEPHYRA SICA.
2. Dº ARMATA.
3. Dº ACANTHITELSONIS.

PLATE CXXVI.

PLATE CXXVI.

Acanthephyra edwardsii (p. 747).

Fig. 1. Lateral view of male.

„ 1z. Telson.

Acanthephyra carinata (p. 748).

„ 2. Lateral view of male.

„ 2*a*. Ophthalmopod.

„ 2z. Telson.

Acanthephyra acutifrons (p. 749).

„ 3. Lateral view of male.

„ 3*a*. Ophthalmopod.

„ 3z. Telson.

Acanthephyra kingsleyi (p. 751).

„ 4. Lateral view of male.

„ 4*a*. Ophthalmopod.

„ 4z. Telson.

Acanthephyra brevirostris (p. 751).

„ 5. Lateral view of male.

„ 6. Lateral view of a variety (p. 752).

„ 6*a*. Ophthalmopod.

„ 6*p*. First pleopod.

„ 6z. Telson.

Acanthephyra brachytelsonis (p. 733).

„ 7. Lateral view of female.

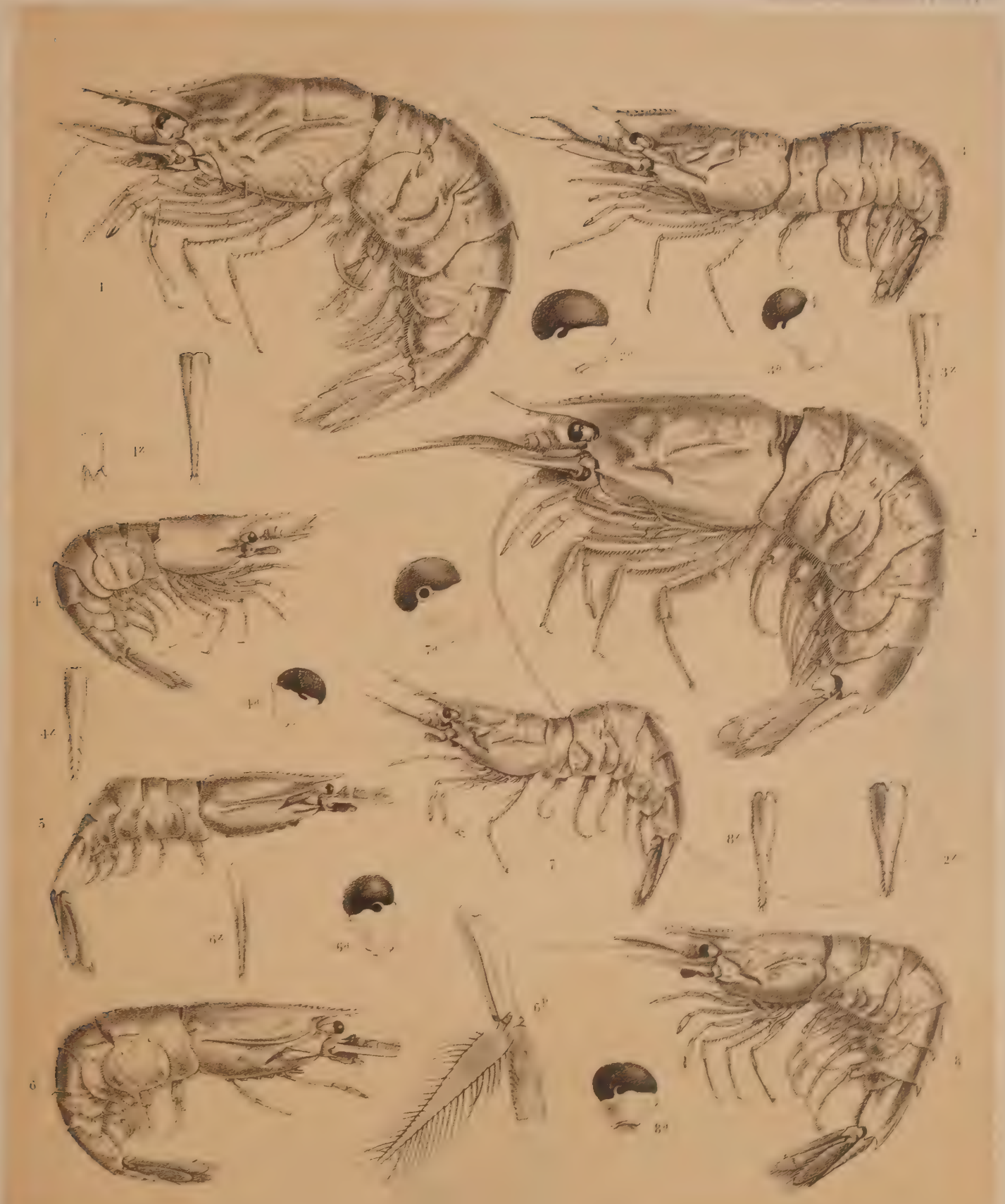
„ 7*a*. Ophthalmopod.

Acanthephyra approxima (p. 755).

„ 8. Lateral view of male.

„ 8*a*. Ophthalmopod.

„ 8z. Telson.



1. ACANTHEPHYRA EDWARDSII.
2. Dº CARINATA.
3. Dº ACUTIFRONS.
4. Dº KINGSLEYI.
5. ACANTHEPHYRA BREVIROSTRIS.
6. Dº Dº . var
7. Dº BRACHYTELSONIS.
8. Dº APPROXIMA.

PLATE CXXVII.

PLATE CXXVII.

Oplophorus typus (p. 762).

Fig. 1. Lateral view of female; enlarged twice.

,, 1*a*. Ophthalmopod.

,, 1*b*. First antenna.

,, 1*c*. Second antenna.

,, 1*d*. Mandible.[1]

,, 1*g*. Third siagnopod.

,, 1*h*. First gnathopod.

,, 1*i*. Second gnathopod.

,, 1*k*. First pereiopod.

,, 1z. Telson.

Oplophorus longirostris (p. 765).

,, 2. Lateral view of female; enlarged twice.

Oplophorus brevirostris (p. 766).

,, 3. Lateral view; enlarged twice.

Procletes biangulatus (p. 884).

,, 4. Lateral view; enlarged four times.

,, 4*c*. Dorsal view of carapace; *a*, ophthalmopod; *b*, first, and *c*, second antenna.

[1] The mandible is drawn from an imperfect specimen; the synaphipod is triarticulate.

C.S.B. ad nat. J. Richards lith.

1. OPLOPHORUS TYPUS.
2. Dº LONGIROSTRIS.
3. OPLOPHORUS BREVIROSTRIS.
4. PROCLETES BIANGULATUS.

PLATE CXXVIII.

PLATE CXXVIII.

Campylonotus semistriatus (p. 768).

Fig. 1. Lateral view of female; enlarged.

„ 2. Ventral aspect of pereion.

Campylonotus capensis (p. 773).

„ 3. Lateral view of female.

Palæmonella orientalis (p. 787).

„ 4. Lateral view; enlarged twenty times.

„ 4*i*. Second gnathopod.

Palæmon affinis (p. 782).

„ 5. Lateral view of female; enlarged three times.

„ 5*a*. Ophthalmopod.

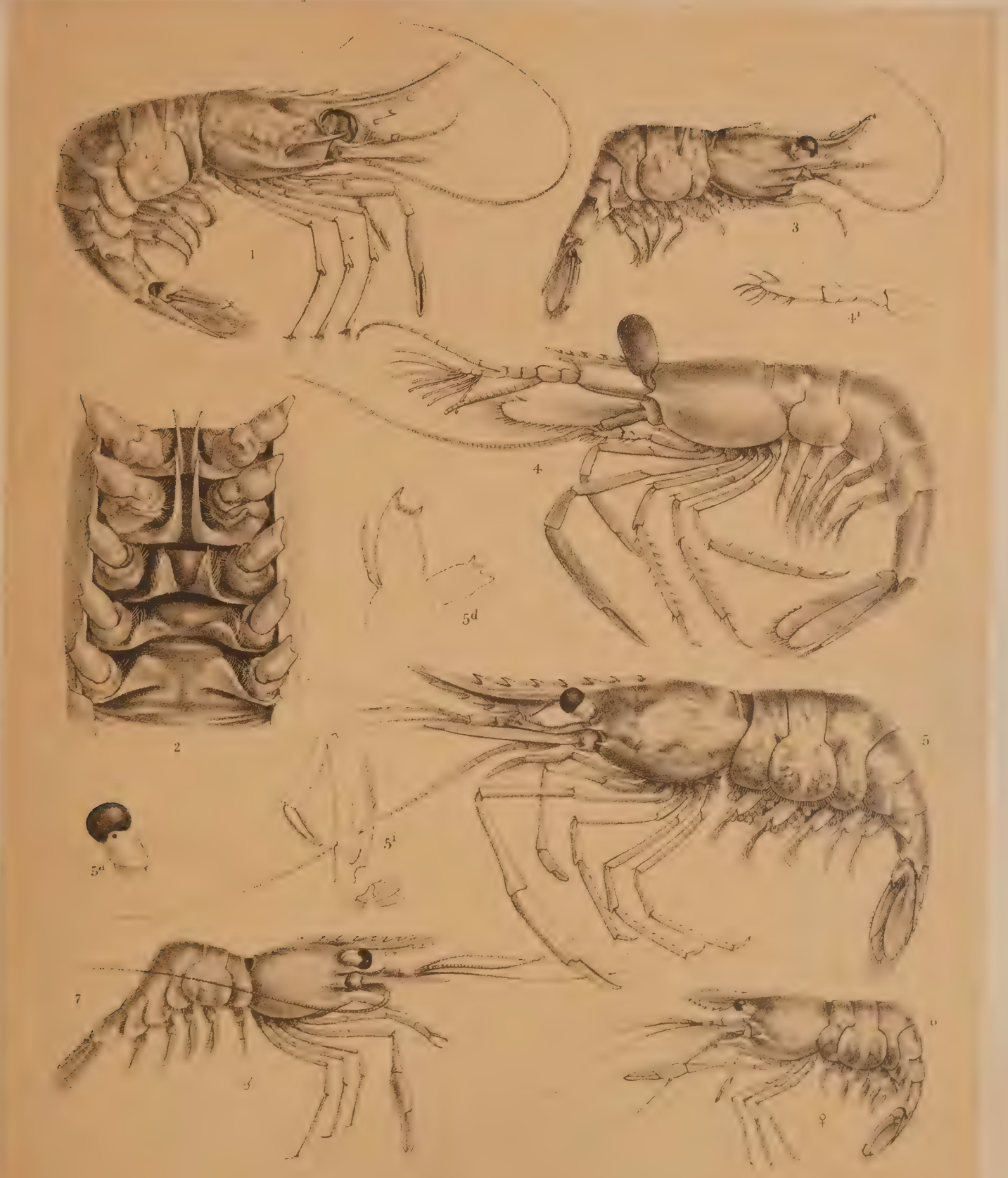
„ 5*d*. Mandible.

„ 5*i*. Second gnathopod.

Palæmon natator (p. 784).

„ 6. Lateral view of female; enlarged twice.

„ 7. Lateral view of male; enlarged two and a half times.



Hanhart imp

1. CAMPYLONOTUS SEMISTRIATUS.
2. Dº Dº (VENTRAL)
3. Dº CAPENSIS.
4. PALÆMONELLA ORIENTALIS.
5. PALÆMON AFFINIS.
6, 7. Dº NATATOR.

PLATE CXXIX.

PLATE CXXIX.

Bithynis lar (p. 789).

Fig. 1. Lateral view of male.

Bithynis grandimanus (p. 793).

,, 2. Lateral view.

,, 2*l'*. Second pereiopod, left.

,, 3. Lateral view of variety (p. 795).

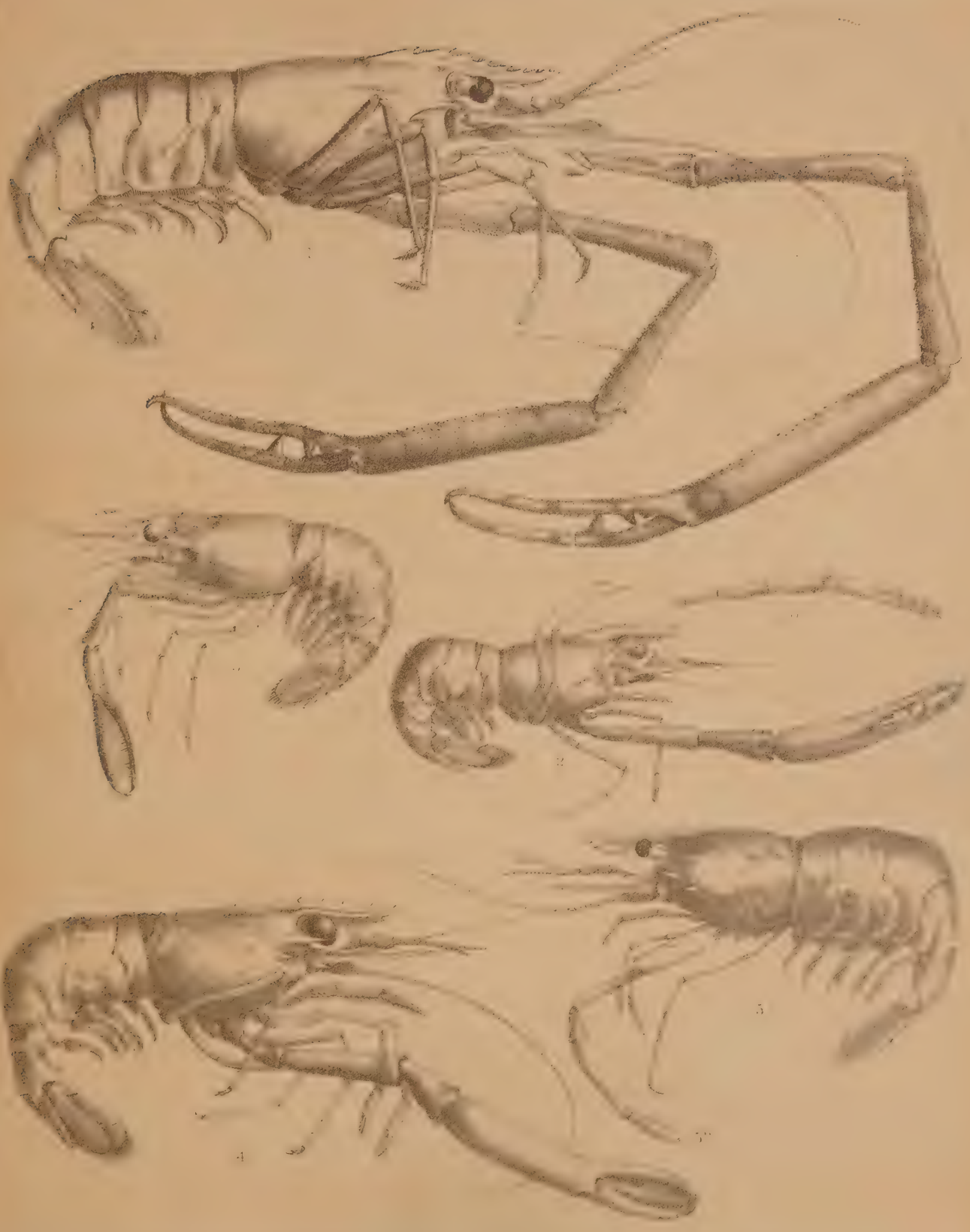
Brachycarpus savignyi (p. 795).

,, 4. Lateral view; enlarged twice.

Brachycarpus audouini (p. 798).

,, 5. Lateral view of female; enlarged eight times.

,, 5*k*. First pereiopod, right.



Mintern Bros. imp.

Hanhart imp.

1. BITHYNIS LAR.
2. Do GRANDIMANUS.
3. BITHYNIS GRANDIMANUS, VAR.
4. BRACHYCARPUS SAVIGNYI.
5. BRACHYCARPUS AUDOUINI.

PLATE CXXX.

PLATE CXXX.

Nematocarcinus undulatipes (p. 801).

Fig. 1. Lateral view of female; enlarged half.

d. Mandible.

e. First siagnopod.

f. Second siagnopod.

g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod, terminal joints.

k. First pereiopod, terminal joints.

q. Second pleopod, with ova attached.

C.S.B. ad nat. J.C. Richards lith.

NEMATOCARCINUS UNDULATIPES.

Hanhart imp.

PLATE CXXXI.

PLATE CXXXI.

Nematocarcinus lanceopes (p. 804).

Fig. 1. Lateral view.

♀. Ventral surface of pereion of female.

♂. Ventral surface of pereion of male.

k. First pereiopod; chela.

m. Third pereiopod; coxal and basisal joints, with arthrobranchial plumes and ecphysis attached.

n. Fourth pereiopod; ischio-mæral articulation, inner surface; *n'*, outer surface.

o. Fifth pereiopod; terminal joints.

p ♂. First pleopod of male.

p ♀. First pleopod of female.

q ♀. Second pleopod of female, with ova attached.

NEMATOCARCINUS LANCEOPES.

PLATE CXXXII.

PLATE CXXXII.

Nothocaris spiniserratus (p. 663).

Fig. 1. Lateral view; enlarged sixteen times.

„ 1c. Rostrum; magnified.

Nematocarcinus longirostris (p. 806).

„ 2. Carapace, lateral view.

Nematocarcinus proximatus (p. 808).

„ 3. Carapace, lateral view.

Nematocarcinus altus (p. 809).

„ 4. Carapace, lateral view.

Nematocarcinus productus (p. 810).

„ 5. Carapace, lateral view.

Nematocarcinus tenuipes (p. 812).

„ 6. Carapace, lateral view.

Nematocarcinus parvidentatus (p. 814).

„ 7. Carapace, lateral view.

Nematocarcinus gracilis (p. 815).

„ 8. Carapace, lateral view.

Nematocarcinus paucidentatus (p. 819).

„ 9. Carapace, lateral view.

Nematocarcinus tenuirostris (p. 817).

„ 10. Carapace, lateral view.

Nematocarcinus serratus (p. 819).

„ 11. Rostrum.

Nematocarcinus hiatus (p. 821).

„ 12. Carapace, lateral view.

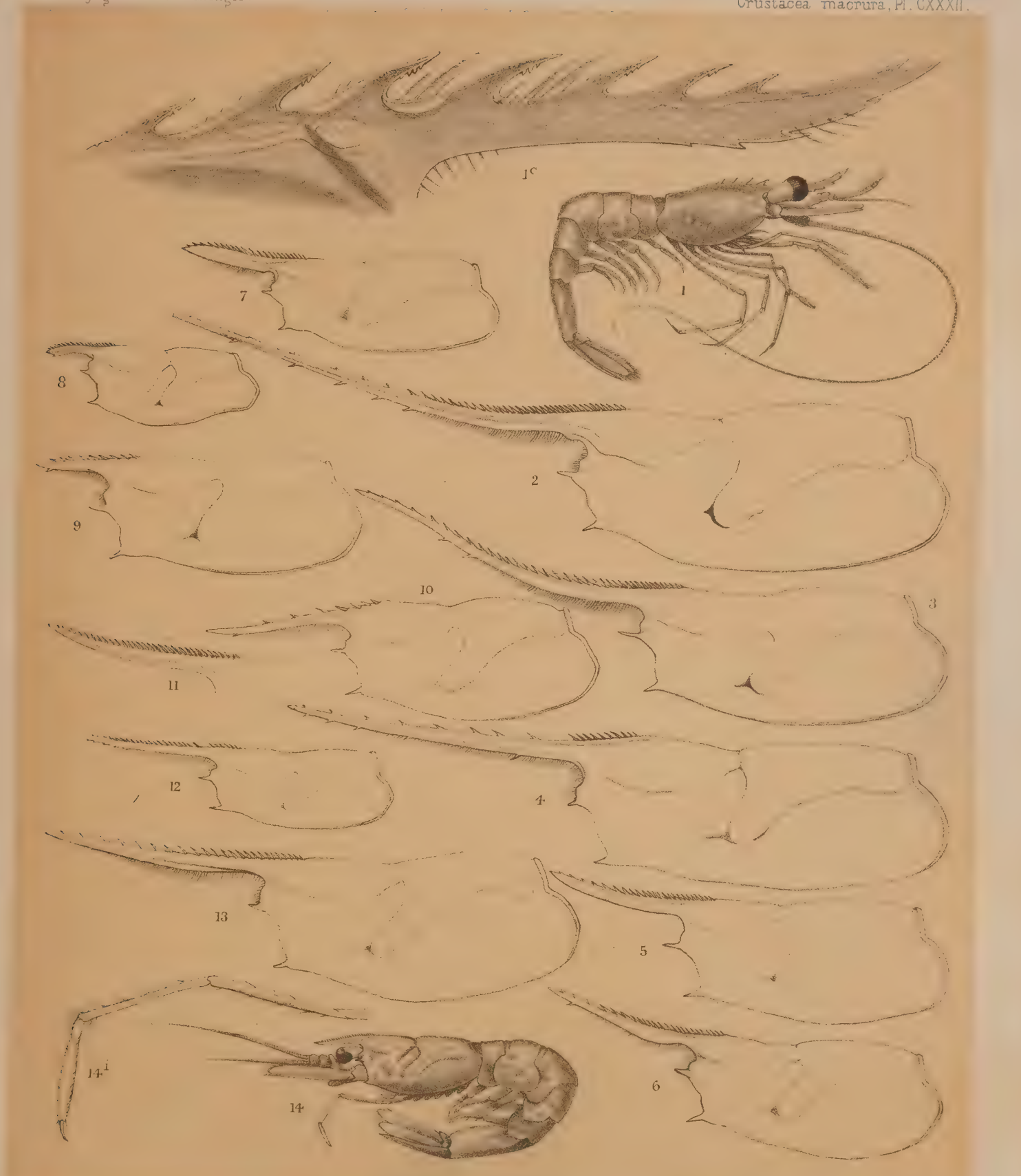
Nematocarcinus intermedius (p. 821).

„ 13. Carapace, lateral view.

Stochasmus exilis (p. 823).

„ 14. Lateral view; enlarged three times.

„ 14*i*. Second gnathopod.



C.S.B. ad nat. J.C. Richards lith.

Hanhart imp.

1. NOTHOCARIS SPINISERRATUS.
2. NEMATOCARCINUS LONGIROSTRIS.
3. Dº PROXIMATUS.
4. Dº ALTUS.
5. Dº PRODUCTUS.
6. NEMATOCARCINUS TENUIPES.
7. Dº PARVIDENTATUS.
8. Dº GRACILIS.
9. Dº PAUCIDENTATUS.
10. Dº TENUIROSTRIS.
11. NEMATOCARCINUS SERRATUS.
12. Dº HIATUS.
13. Dº INTERMEDIUS.
14. STOCHASMUS EXILIS.

PLATE CXXXIII.

PLATE CXXXIII.

Notostomus patentissimus (p. 826).

Fig. 1. Lateral view.

d. Mandible.

e. First siagnopod.

f. Second siagnopod.

g. Third siagnopod.

h. First gnathopod.

i. Second gnathopod.

m. Third pereiopod; with arthrobranchia, mastigobranchia, and basecphysis attached.

o. Fifth pereiopod; terminal joints.

p. First pleopod.

q. Second pleopod.

br. Section of a branchial plume.

NOTOSTOMUS PATENTISSIMUS.

PLATE CXXXIV.

PLATE CXXXIV.

Notostomus patentissimus (p. 826).

Fig. 1. Ventral surface.

„ 1*a*. Ophthalmopod.

„ 1*b*. First antenna; 1*b*″, portion of flagellum; 1*b*‴, section of flagellum.

„ 1*c*. Second antenna.

„ 2. Branchiæ in position.

Notostomus murrayi (p. 829).

„ 3. Lateral view; enlarged twice.

C.S.Badnal J.C.Richards lith

Hanhart imp

1. NOTOSTOMUS PATENTISSIMUS.
2. Dº Dº (BRANCHIÆ)
3. Dº MURRAYI.

PLATE CXXXV.

PLATE CXXXV.

Notostomus japonicus (p. 830).

Fig. 1. Lateral view of male.

Notostomus perlatus (p. 831).

,, 2. Lateral view of female.

Notostomus brevirostris (p. 832).

,, 3. Lateral view of male.

Notostomus longirostris (p. 833).

,, 4. Lateral view of female.

C. S. Bad nat. J. Hawkins lith. Hanhart imp.

1. NOTOSTOMUS JAPONICUS. 3. NOTOSTOMUS BREVIROSTRIS.
2. Dº PERLATUS. 4. Dº LONGIROSTRIS.

PLATE CXXXVI.

PLATE CXXXVI.

Tropiocaris planipes (p. 835).

Fig. 1. Lateral view; enlarged twice.

Tropiocaris tenuipes (p. 836).

„ 2. Lateral view; enlarged twice.

Hymenodora duplex (p. 843).

„ 3. Lateral view; enlarged one and a half times.

„ 3*c*. Second antenna; scaphocerite.

„ 3*d*. Mandible.

„ 3*f*. Second siagnopod.

„ 3*g*. Third siagnopod.

„ 3*h*. First gnathopod.

„ 3*i*. Second gnathopod; basal joints with branchiæ attached.

„ 3*o*. Fifth pereiopod; terminal joint.

Hymenodora rostrata (p. 847).

„ 4. Lateral view; enlarged twice.

Hymenodora mollis (p. 841).

„ 5. Lateral view; enlarged twice.

C.S.B. ad nat. J.C. Richards lith. Hanhart imp

1. TROPIOCARIS PLANIPES. 3. HYMENODORA DUPLEX.
2. Dº TENUIPES. 4. Dº ROSTRATA.
5. HYMENODORA MOLLIS.

PLATE CXXXVII.

PLATE CXXXVII.

Hymenodora glauca (p. 847).

Fig. 1. Lateral view; enlarged twice.

„ 1*d*. Mandible.

„ 1*m.a*. Metastoma.

„ 1*e*. First siagnopod.

„ 1*f*. Second siagnopod.

„ 1*g*. Third siagnopod.

„ 1*h*. First gnathopod.

„ 1*i*. Second gnathopod.

„ 1*k*. First pereiopod.

„ 1*m*. Third pereiopod.

„ 1*o*. Fifth pereiopod; terminal extremity.

Hymenodora mollicutis (p. 848).

„ 2. Lateral view; enlarged a half.

„ 2*i*. Second gnathopod.

„ 2*k*. First pereiopod; chela.

„ 2*br*. Section of branchia.

C.S.B. ad nat. J.C.Richards lith.

Hanhart. imp.

1. HYMENODORA GLAUCA.
2. Dº MOLLICUTIS.

PLATE CXXXVIII.

PLATE CXXXVIII.

Stylodactylus discissipes (p. 851).

Fig. 1. Lateral view of male; enlarged twice.

„ 1*c*. Second antenna; peduncle and part of frontal margin.

„ 1*i*. Second gnathopod; 1*i'*, dactylos.

„ 1*k*. First pereiopod.

„ 1*k'*. First pereiopod; articulation of chela reversed.

„ 1*vzv*. Rhipidura.

Stylodactylus orientalis (p. 854).

„ 2. Branchiæ in position.

„ 2*d*. Mandible.

„ 2*e*. First siagnopod.

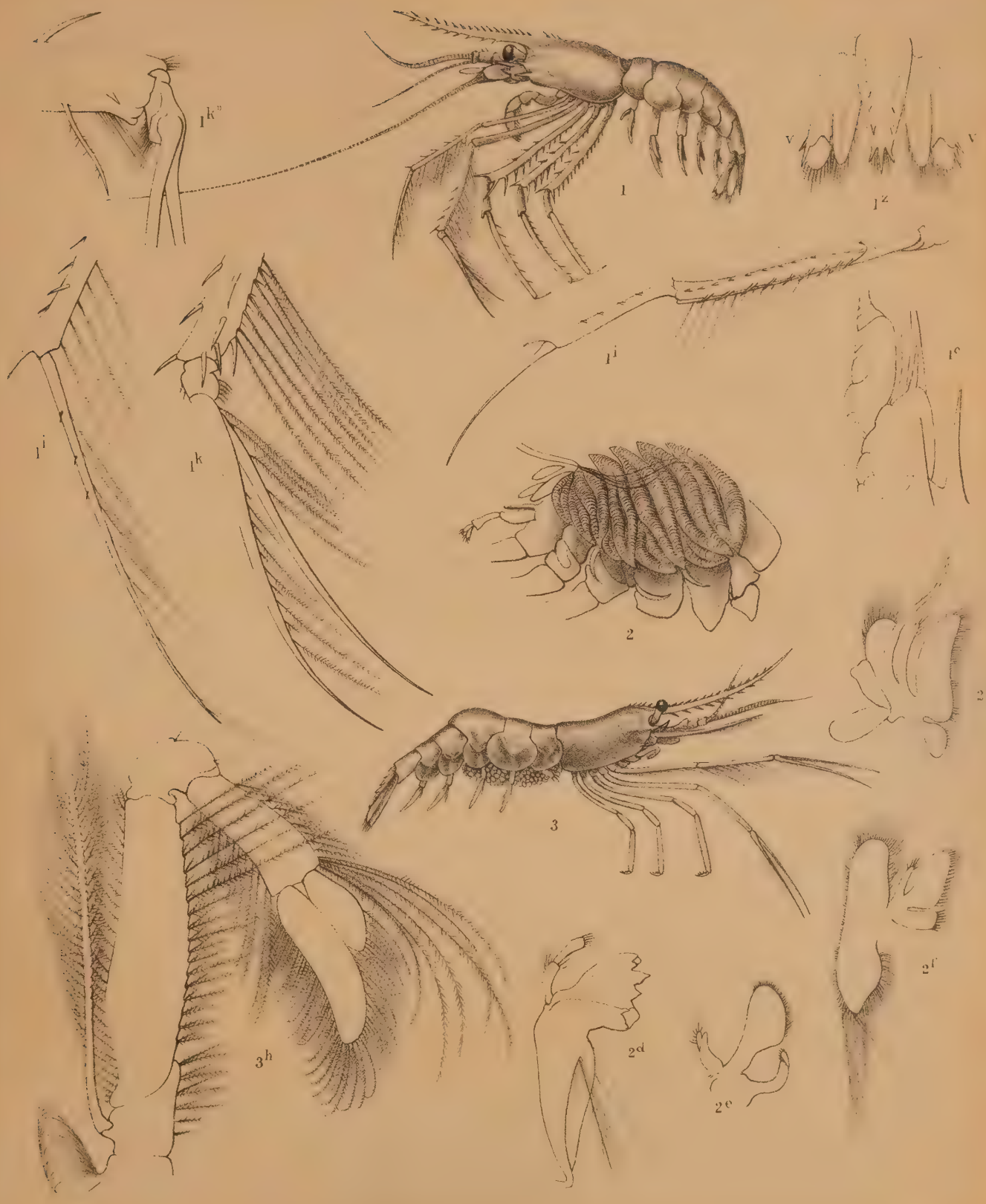
„ 2*f*. Second siagnopod.

„ 2*g*. Third siagnopod.

Stylodactylus bimaxillaris (p. 855).

„ 3. Lateral view of female; enlarged twice.

„ 3*h*. First gnathopod.



C.S.B. ad nat., J.C. Richards lith. Hanhart

1. STYLODACTYLUS DISCISSIPES.
2. Dº ORIENTALIS.
3. Dº BIMAXILLARIS.

PLATE CXXXIX.

PLATE CXXXIX.

Leptochela serratorbita (p. 859).

Fig. 1. Lateral view; enlarged five times.

,, 1*c*. Frontal margin of carapace, showing ophthalmopod in position.

,, 1*d*. Mandible.

,, 1*e*. First siagnopod.

,, 1*f*. Second siagnopod.

,, 1*h*. First gnathopod.

,, 1*i*. Second gnathopod.

,, 1*k*. First pereiopod; chela.

,, 1*o*. Fifth pereiopod.

,, 1*z*. Telson.

Leptochela gracilis (p. 860).

,, 2. Lateral view of male; enlarged.

,, 2*o*. Fifth pair of pereiopoda.

,, 2*br*. Branchial plume; *br''*, section of same.

Leptochela robusta (p. 862).

,, 3. Lateral view of female; enlarged three times.

,, 4 Lateral view of male; enlarged three times.

C.S.B. ad nat. J.C.Richards lith. Hanhart lith.

1. LEPTOCHELA SERRATORBITA.
2. Dº GRACILIS.
3,4. Dº ROBUSTA.

PLATE CXL.

PLATE CXL.

Pasiphæa cristata (p. 865).

Fig. 1. Lateral view of female; enlarged a half.

k. First pereiopod; chela.

k'. First pereiopod; extremity of pollex and dactylos magnified.

m. Third pereiopod.

n. Fourth pereiopod.

o. Fifth pereiopod.

p. First pleopod; inner ramus in position.

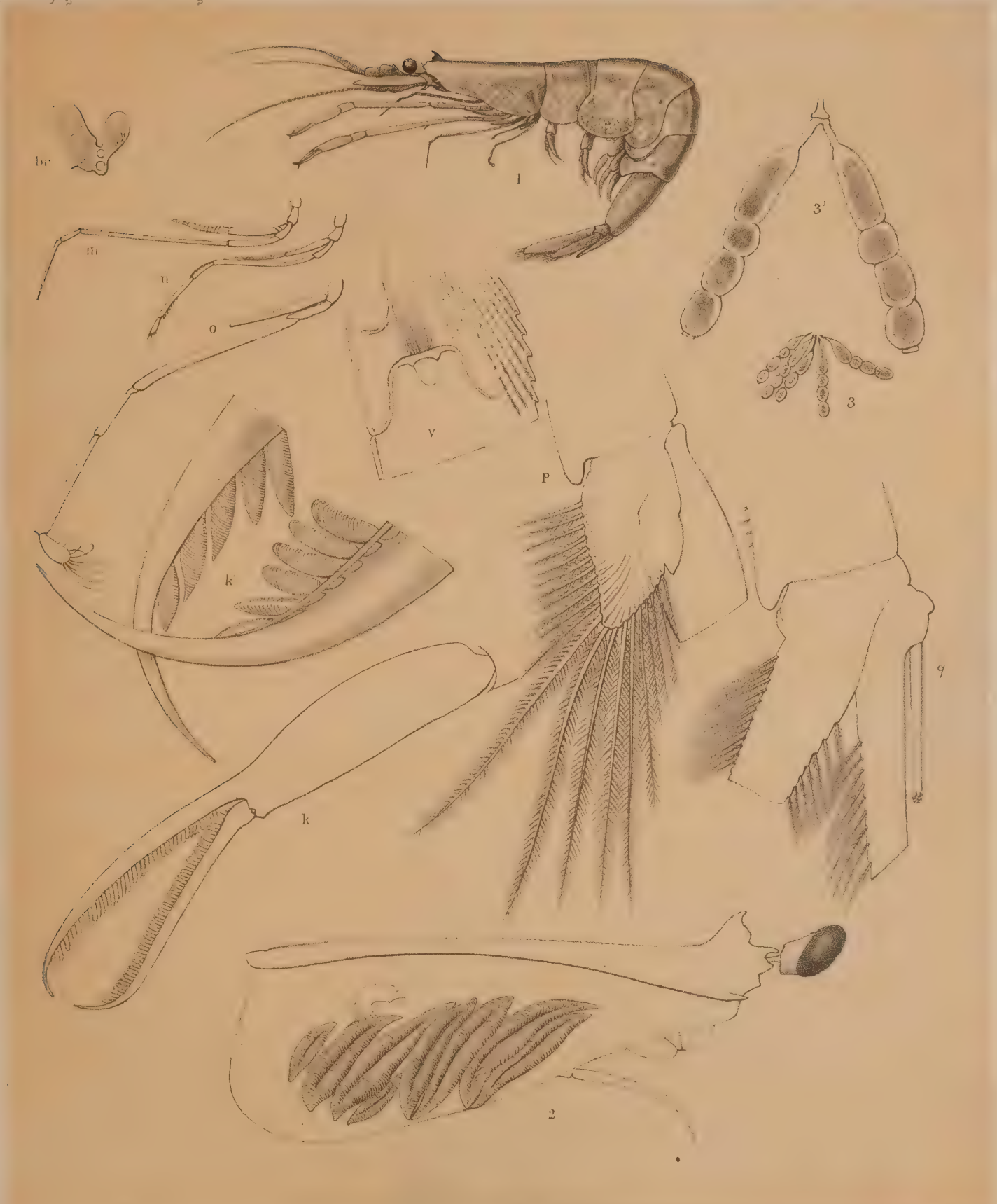
q. Second pleopod with stylamblys.

v. Sixth pleopod; portion enlarged, showing the diæresis.

br. Section of branchial plume.

„ 2. Branchiæ in position.

„ 3. Parasite; 3', the same, enlarged.



C.S.B. ad nat. J.C. Richards lith. Hanhart imp

1. PASIPHÆA CRISTATA.
2. Dº Dº (BRANCHIÆ.)

PLATE CXLI.

PLATE CXLI.

Pasiphæa cristata (p. 865).

Fig. 1*d*. Mandible.

„ 1*e*. First siagnopod.

„ 1*f*. Second siagnopod; 1*f''*, two hairs, enlarged.

„ 1*g*. Third siagnopod.

„ 1*h*. First gnathopod.

Pasiphæa amplidens (p. 870).

„ 2. Lateral view of carapace.

Pasiphæa acutifrons (p. 871).

„ 3. Lateral view.

„ 3*z*. Telson.

Orphania tenuimana (p. 872).

„ 4. Lateral view; enlarged.

„ 4*k*. First pereiopod.

„ 4*l*. Second pereiopod.

„ 4*z*. Telson.

Hanhart imp.

1. PASIPHÆA CRISTATA. 3. PASIPHÆA ACUTIFRONS.
2 Dº AMPLIDENS. 4. ORPHANIA TENUIMANA.

PLATE CXLII.

PLATE CXLII.

Oodeopus geminidentatus (p. 876).

Fig. 1. Lateral view; enlarged twenty-five times.

„ 1z. Telson.

Oodeopus serratus (p. 877).

„ 2. Lateral view; enlarged twenty-five times.

„ 2z. Telson.

Oodeopus serratus, var. (p. 878).

„ 3. Lateral view; enlarged fifteen times.

Oodeopus armatus (p. 879).

„ 4. Lateral view; enlarged twenty times.

Oodeopus longispinus (p. 881).

„ 5. Lateral view; enlarged twenty times.

„ 5z. Telson.

C.S.B. ad nat. J.C. Richards lith.

Hanhart imp.

1. OODEOPUS GEMINIDENTATUS. 3. OODEOPUS SERRATUS, var.
2. Dº SERRATUS. 4. Dº ARMATUS.
5. OODEOPUS LONGISPINUS.

PLATE CXLIII.

PLATE CXLIII.

Oodeopus intermedius (p. 879).

Fig. 1. Lateral view; enlarged twenty times.

„ 1*v.z.v.* Rhipidura.

Oodeopus duplex (p. 880).

„ 2. Lateral view; enlarged twenty times.

Oodeopus gibbosus (p. 882).

„ 3. Lateral view; enlarged twenty-two times.

„ 3*v.z.v.* Rhipidura.

„ 4. Dorsal view.

S. Baddat, J.C. Richards lith.

Hanhart imp

1. OODEOPUS INTERMEDIUS.
2. Dº DUPLEX.
3,4. Dº GIBBOSUS.

PLATE CXLIV.

PLATE CXLIV.

Icotopus arcurostris (p. 886).

Fig. 1. Lateral view; enlarged ten times.

„ 1*d*. Mandible.

„ 1*f*. Second siagnopod.

„ 1*g*. Third siagnopod.

„ 1*br*. Branchial plume.

„ 1c. Cephalon.

Hectarthropus exilis (p. 889).

„ 2. Lateral view; enlarged ten times.

„ 2t. Fifth somite; dorsal aspect.

Hectarthropus compressus (p. 891).

„ 3. Lateral view; enlarged eleven times.

Hectarthropus expansus (p. 892).

„ 4. Dorsal view; enlarged twelve times.

„ 5. Lateral view; enlarged twelve times.

Hectarthropus tenuis (p. 893).

„ 6. Lateral view; enlarged ten times.

C.S.B. ad nat. J.C. Richards lith.

Hanhart imp

1. ICOTOPUS ARCUROSTRIS. 3. HECTARTHROPUS COMPRESSUS.
2. HECTARTHROPUS EXILIS. 4, 5. Dº EXPANSUS.
6. HECTARTHROPUS TENUIS.

PLATE CXLV.

PLATE CXLV.

Eretmocaris remipes (p. 895).

Fig. 1. Lateral view; enlarged ten times.

Eretmocaris longicaulis (p. 897).

„ 2. Lateral view; enlarged eighteen times.

Eretmocaris stylorostris (p. 898).

„ 3. Lateral view; enlarged fifteen times.

Eretmocaris corniger (p. 900).

„ 4. Lateral view; enlarged eighteen times.

C.S.B. ad nat. J.C. Richards lith.

Hanhart imp.

1. ERETMOCARIS REMIPES.
2. Dº LONGICAULIS.
3. ERETMOCARIS STYLOROSTRIS.
4. Dº CORNIGER.

PLATE CXLVI.

PLATE CXLVI.

Amphion—Development (p. 902).

Fig. 1. Zoea with two pairs of legs; ventral aspect; enlarged thirty times; *h*, first gnathopod; *i*, second gnathopod.

„ 2z. Telson of a second specimen (pp. 903, 915).

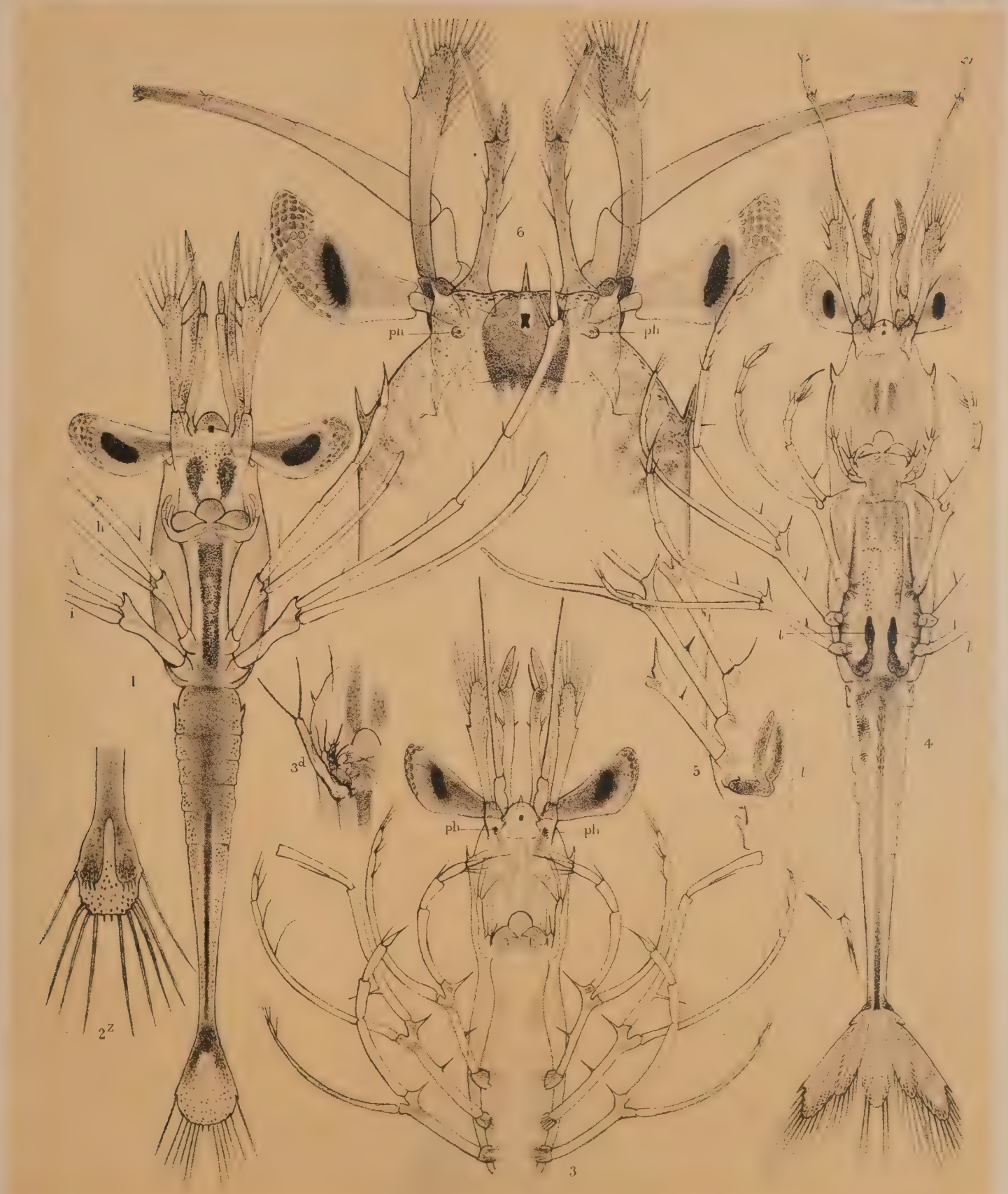
„ 3. Young with three pairs of legs; ventral aspect of cephalon and pereion; *ph*, *ph*, phymacerite (pp. 903, 915).

„ 3*d*. Oral appendages.

„ 4. Young with fourth pair of legs (*l*) in process of development; ventral aspect; enlarged twenty times (pp. 905, 915).

„ 5. A second specimen; portion of pereion showing the fourth pair (*l*) biramose (p. 905).

„ 6. Cephalon of a specimen with five pairs of legs attached to the pereion; ventral surface, magnified; *ph*, *ph*, phymacerite.



J. & E. ad nat. J.C. Richards lith.

AMPHION (Development)

PLATE CXLVII.

PLATE CXLVII.

Amphion reynaudii (p. 906).

Fig. 1. Female with six pairs of legs; ventral aspect; enlarged thirteen times; *h*, *i*, first and second gnathopods; *k*, *l*, *m*, *n*, first to fourth pereiopods; *n.c.* nucleated cells near the fourth pair of legs; *n.c'.*, the same more magnified.

„ 1*br*. Branchial plume.

„ 1*d*. Mandible.

„ 1*e*. First siagnopod.

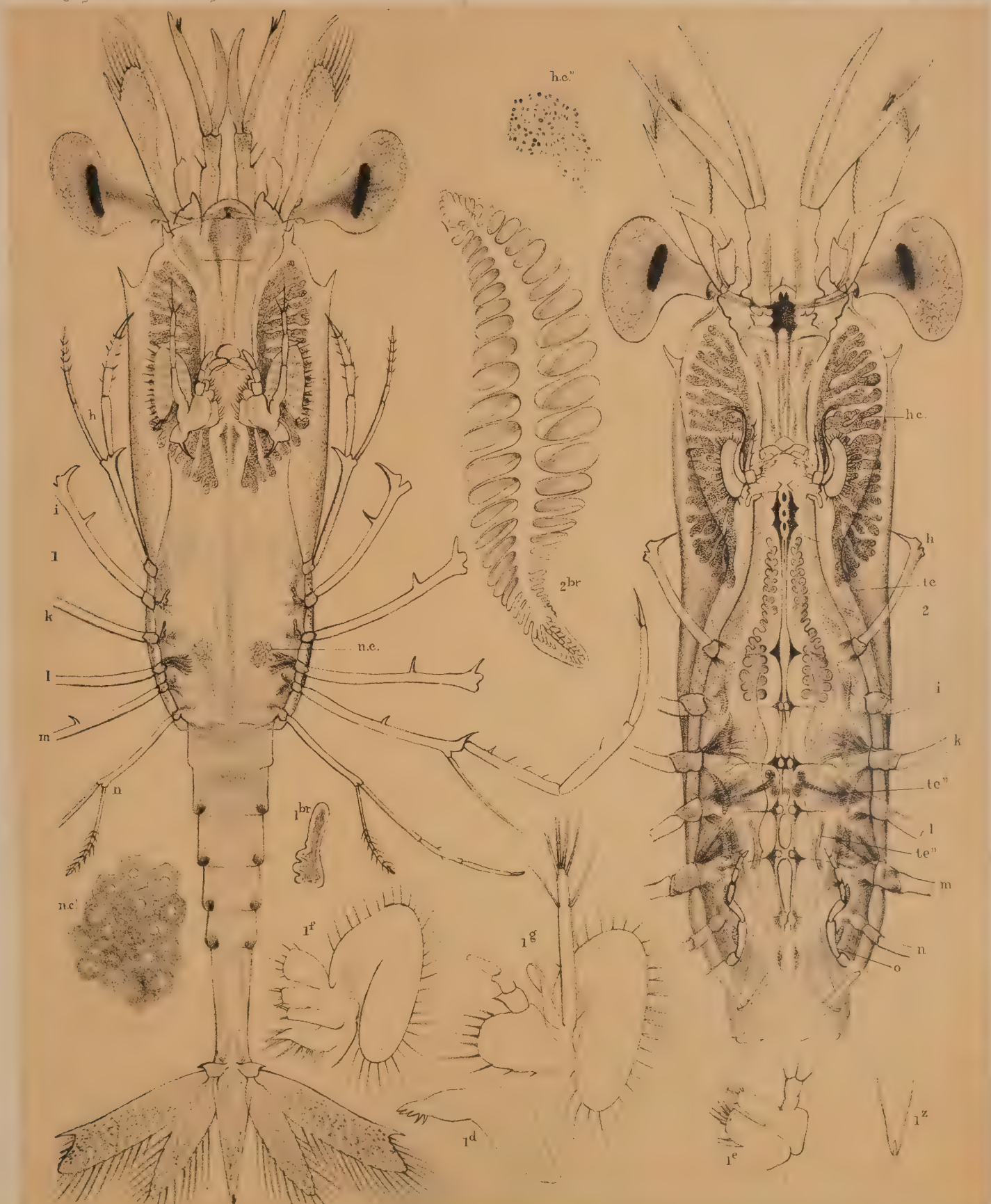
„ 1*f*. Second siagnopod.

„ 1*g*. Third siagnopod.

„ 1z. Telson.

„ 2. Cephalon and pereion of a specimen (adult male ?) with seven pairs of legs; ventral aspect; enlarged sixteen times; *h*, *i*, first and second gnathopods; *k–o*, pereiopoda; *te*, testes (?); *te''*, structure believed by Suhm to be testes; *h.c.*, hepatic cells; *h.c.''*, the same, magnified (p. 910).

„ 2*br*. Branchial plume, enlarged.



C.S.B. ad nat. J.C. Richards lith.

Hanhart imp

1. AMPHION REYNAUDII.
2. Dº Dº (? ADULT)

PLATE CXLVIII.

PLATE CXLVIII.

Amphion provocatoris (p. 913).

Fig. 1. Ventral aspect; enlarged seven times.

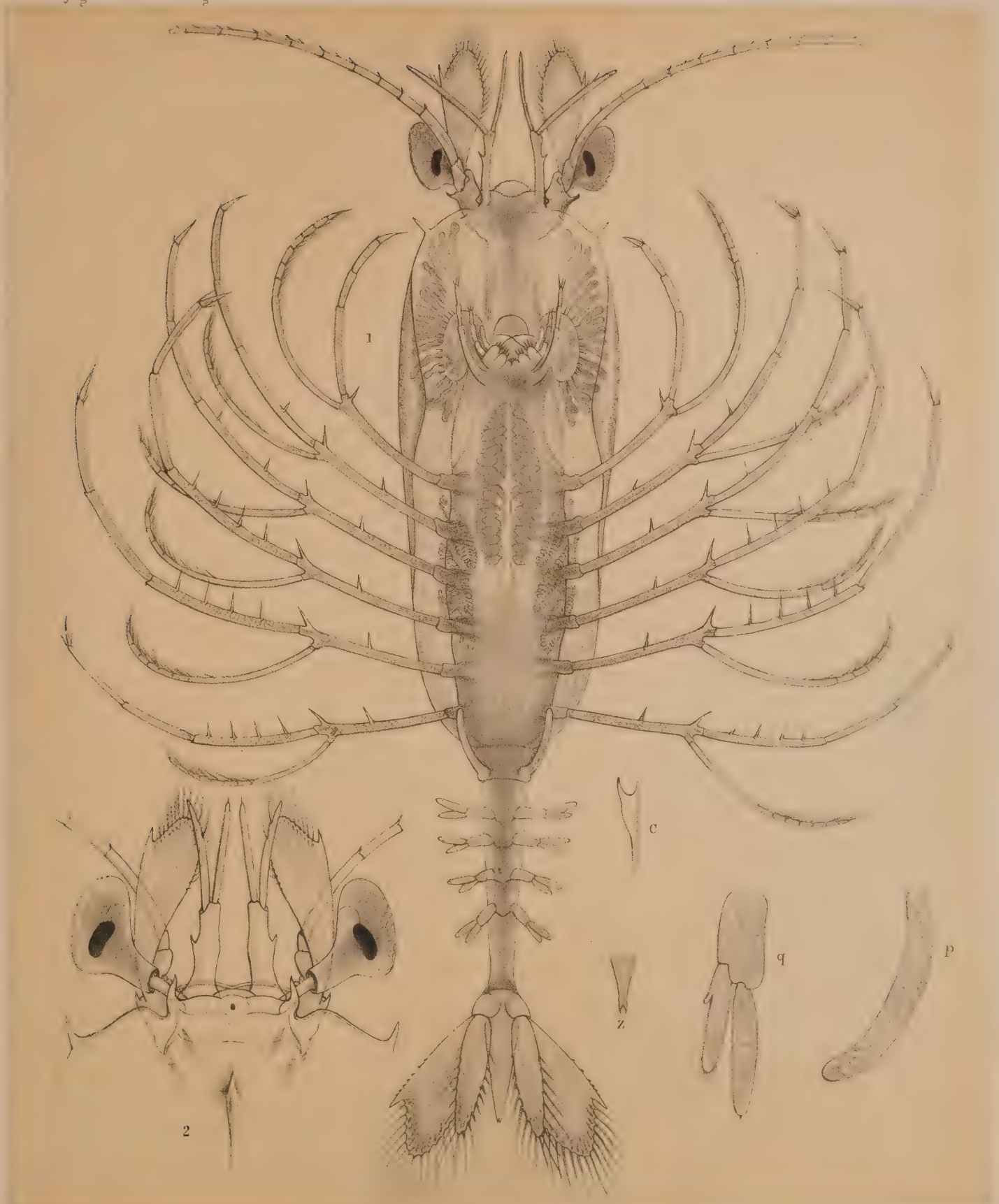
„ 2. Cephalon of the same; dorsal aspect.

„ c. Tooth on dorsal surface of carapace.

„ *p*. First pleopod of male (?).

„ *q*. Second pleopod of same.

„ z. Telson; extremity.



C.S.B. ad nat. J.C. Richards lith.

Hanhart imp.

AMPHION PROVOCATORIS.

PLATE CXLIX.

PLATE CXLIX.

Fig. 1. *Sylon challengeri*, attached to *Spirontocaris spinus*, a part of the right side of the Shrimp having been taken away; *x*, the injured part at the surface of the sac; I., II., III., IV., and V., the first to the fifth pleopods of the left side of the Shrimp; V*a*, the fifth pleopod of the right side. Magnified 13 diameters.

,, 2. *Sylon challengeri*, seen from below, with a part of the wall of the host attached; *e*, the ovary of the parasite. Magnified 12 diameters.

,, 3. *Sylon challengeri*, front view; *x*, the injured part at the surface. Magnified 12 diameters.

,, 4. *Sylon schneideri*, front view; *a*, openings leading into the mantle-cavity; B, transverse section of *Hippolyte pusiola*. Magnified 12 diameters.

,, 5. *Sylon schneideri*, seen from the side, the lateral parts of the exoskeleton of the second and third abdominal segment of the *Hippolyte* being taken away; *a* and B as in fig. 4; II.–IV., second to fourth pleopod. Magnified 12 diameters.

Fig. 1.
× 13.

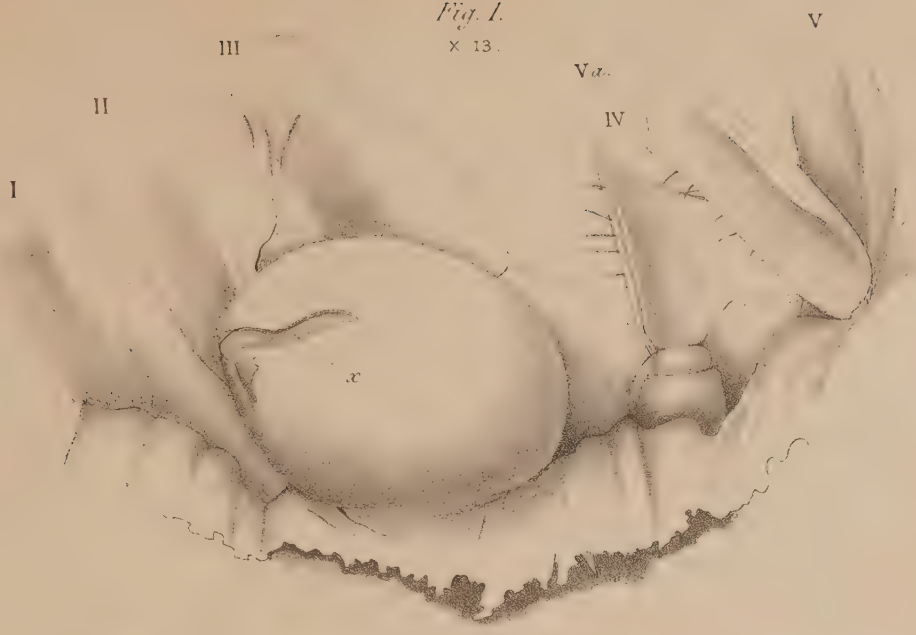
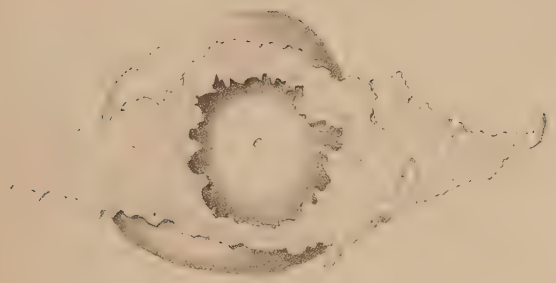


Fig. 2.
× 12.



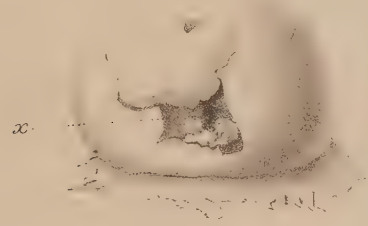
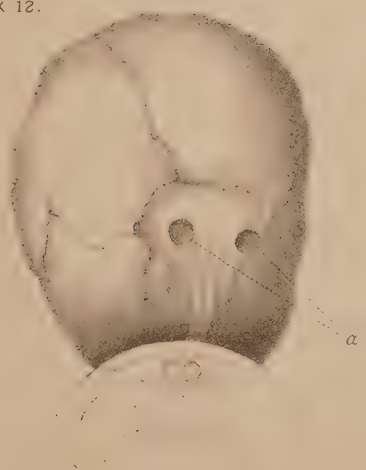
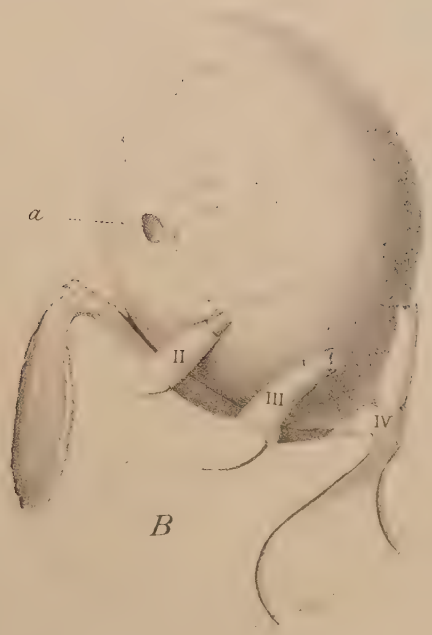


Fig. 3.
× 12.

Fig. 4.
× 12.



B



B

Fig. 5.
× 12.

P.P.C. Hoek del.

F. Huth, Lithʳ Edinʳ

1-3. SYLON CHALLENGERI. 4, 5. SYLON SCHNEIDERI.

PLATE CL.

PLATE CL.

Fig. 1. *Sylon challengeri*, part of a transverse section, passing through the ovary, *e*, and the "Eikittdruse," A; *a*, connective tissue of the mantle; *b*, epithelium surrounding the visceral mass; *c*, ramified tubes of the gland; *d*, female genital pore. Magnified 136 diameters.

,, 2. Part of the mantle and visceral mass of *Sylon schneideri*; *a*, connective tissue of the mantle; *b*, epithelium surrounding the visceral mass; *e*, ovary; *f*, chitinous outer wall of the mantle; *g*, thickening of the chitinous outer wall at the place where later on the openings of the mantle-cavity occur; *h*, epithelium of the outer side of the mantle; *i*, epithelium at the inner side of the mantle; *l*, blood-plasma (?); *n*, nervous system. Magnified 136 diameters.

,, 3. Part of the visceral mass of *Sylon schneideri*; *b* and *e* as in fig. 2; *c*, connective tissue; *l*, blood-plasma (?). Magnified 136 diameters.

,, 4. Section through a part of *Hippolyte pusiola*, with *Sylon schneideri* attached to it; *e*, ovary of the parasite; *n*, nervous system of the *Hippolyte*; B, basilary membrane; *r*, roots of the *Sylon*; *m*, abdominal flexor muscles of the host. Magnified 30 diameters.

,, 5. Section in front of the attachment of *Sylon schneideri* to *Hippolyte pusiola*; *e*, *m*, *n*, and *r* as in fig. 4; *t*, testis. Magnified 30 diameters.

,, 6. Section of the same *Sylon* as in the two foregoing figures; *e*, *t*, as in fig. 5; *t'*, communication of the interior of the testis with the mantle-cavity. Magnified 41 diameters.

Fig. 1.
X 136.

Fig. 2.
X 136.

Fig. 3.
X 136.

Fig. 6.
X 41.

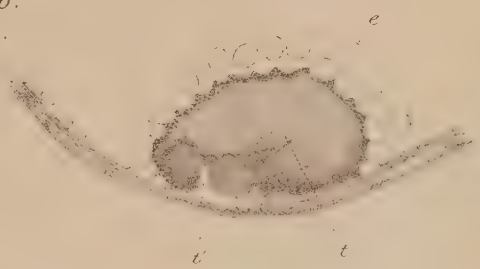


Fig. 4.
X 30.

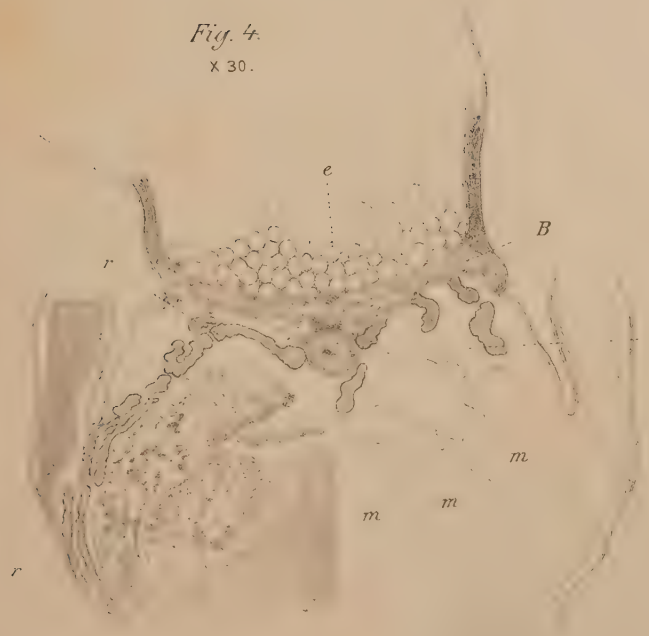


Fig. 5.
X 30.

P.P.C. Hoek del.

F Huth, Lith^r Edin^r

1. SYLON CHALLENGERI. 2-6. SYLON SCHNEIDERI.

JUL 1956
LIBRARY
POFI
FISH & WILDLIFE
SERVICE

Oahu Prison
Bindery